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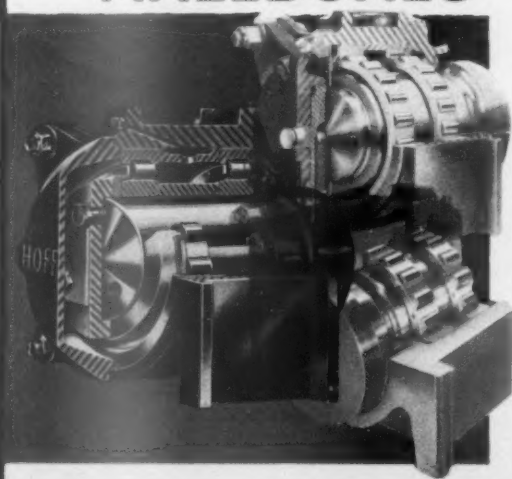
FRIDAY, OCTOBER 6, 1961

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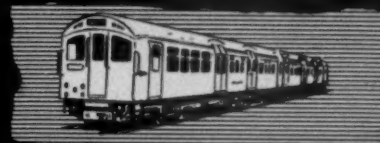
HOFFMANN AXLEBOXES for main line diesel, and electric locomotives

★ The Brush Type 2 A1A-A1A 1250-1365-1600 h.p. Diesel Electric Locomotives for British Railways



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veneer laminate with
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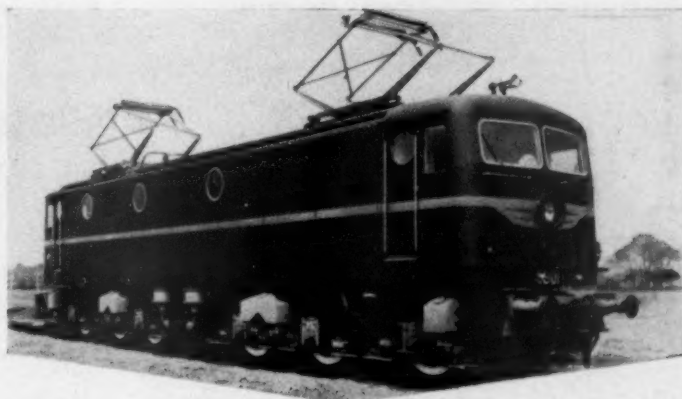
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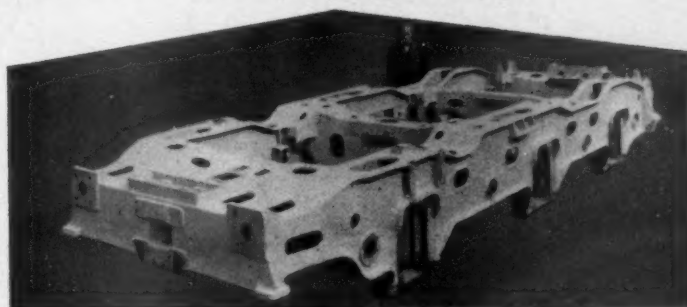
W. A. BONNELL (1924) LTD., 8 WESTMINSTER PALACE GARDENS, ARTILLERY ROW, LONDON, S.W.1 ABBey 1061

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electric locomotive
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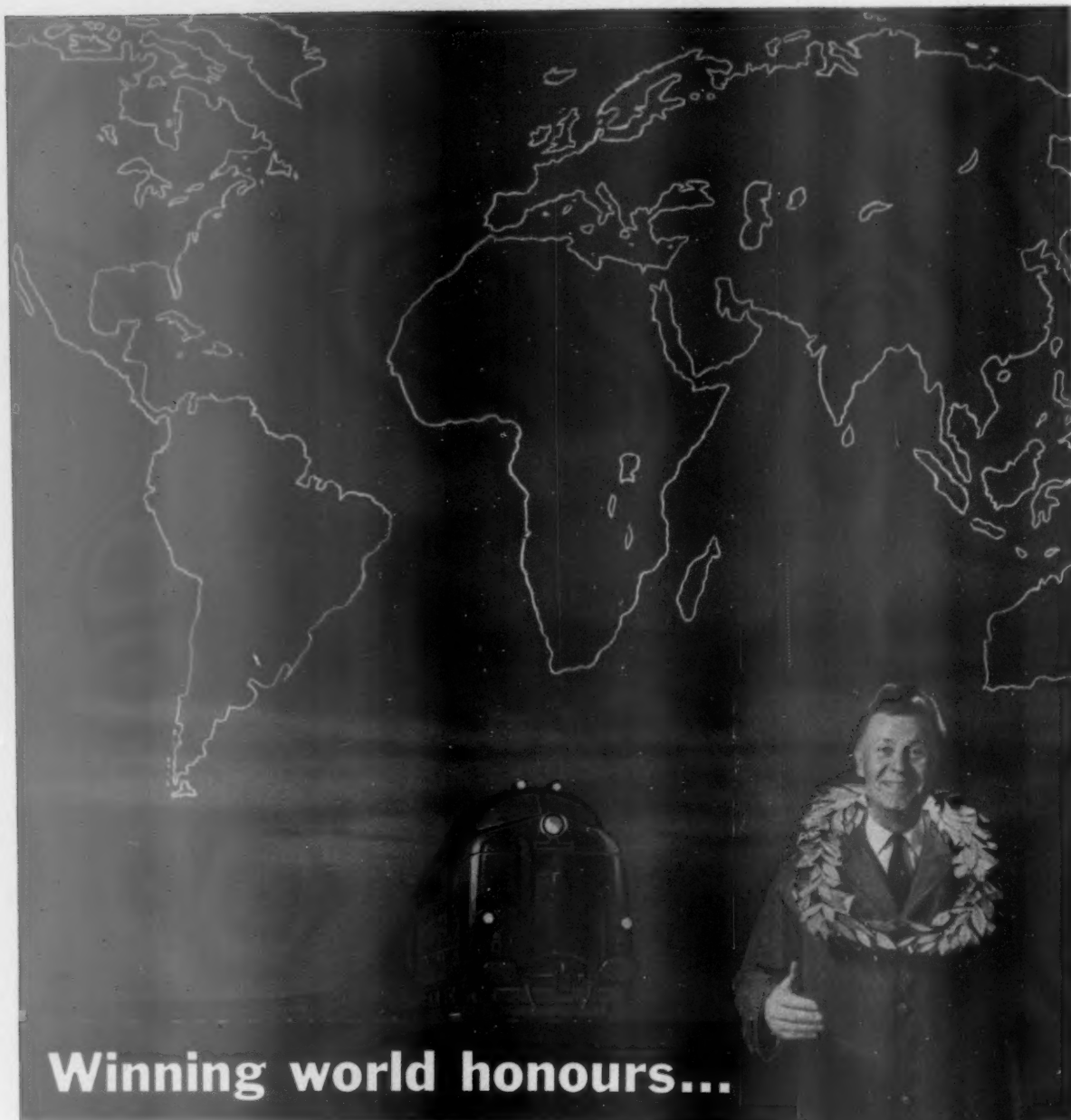
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25 Kv. A.C. Bo-Bo electric
locomotives for
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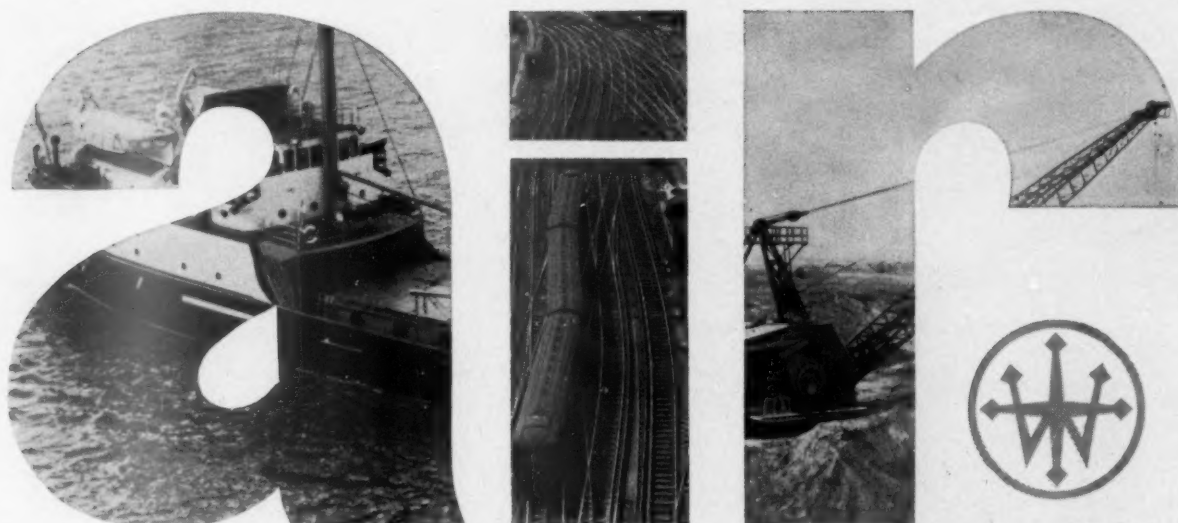
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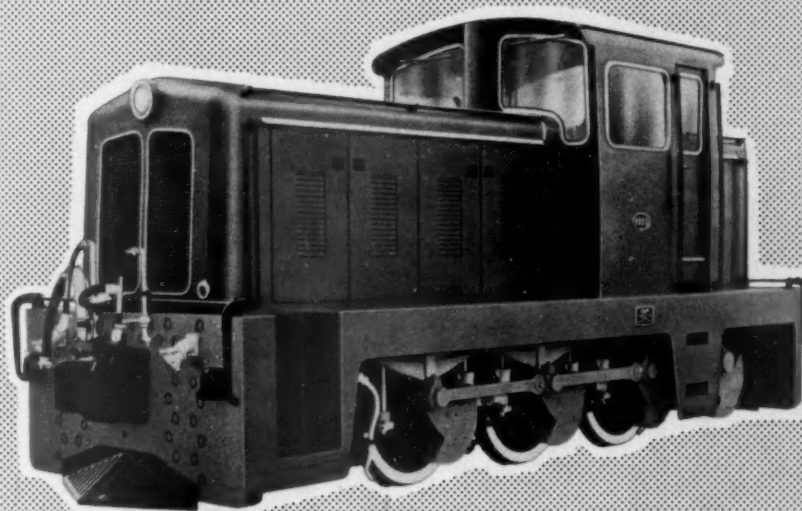
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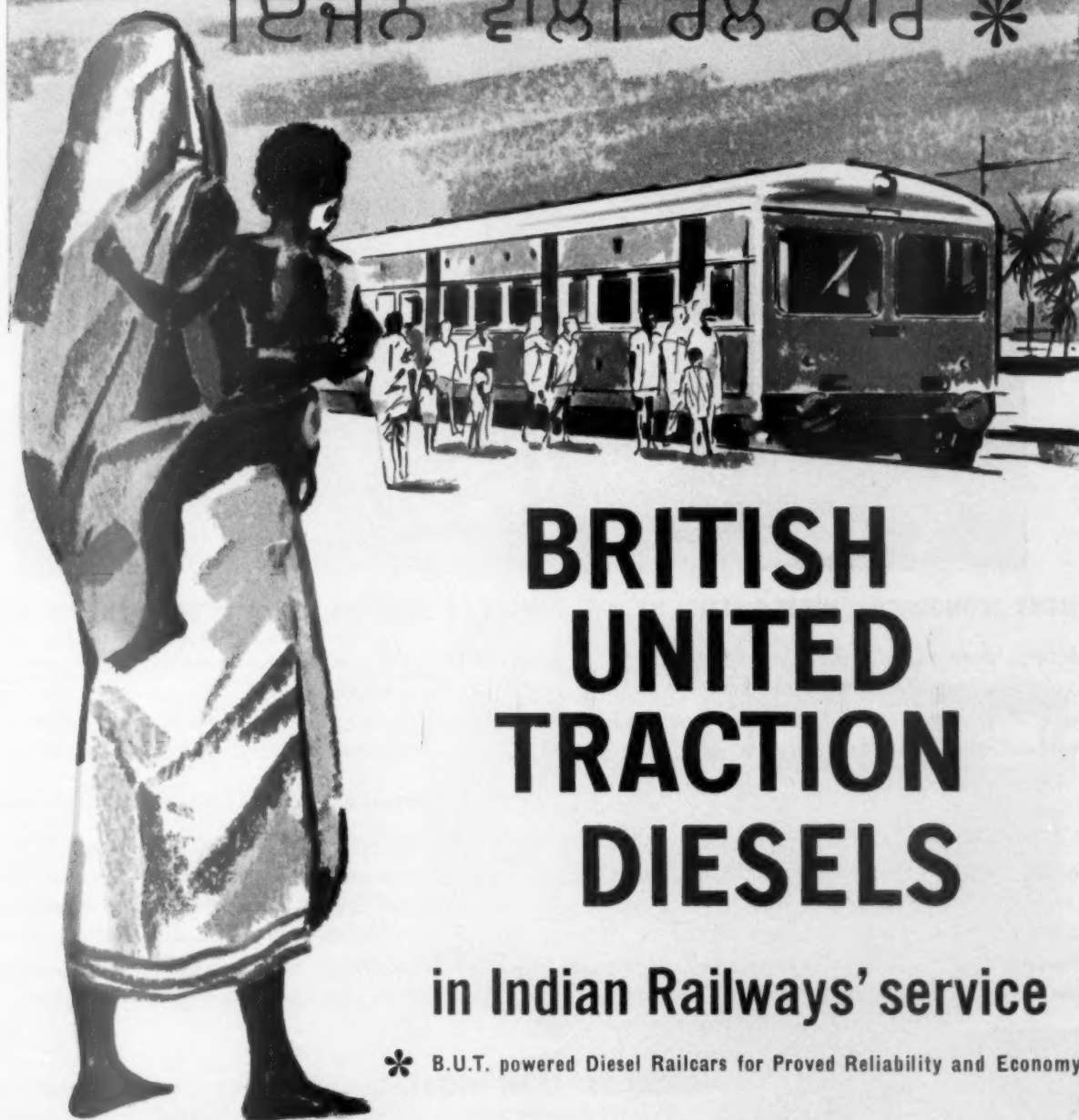
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in Indian Railways' service

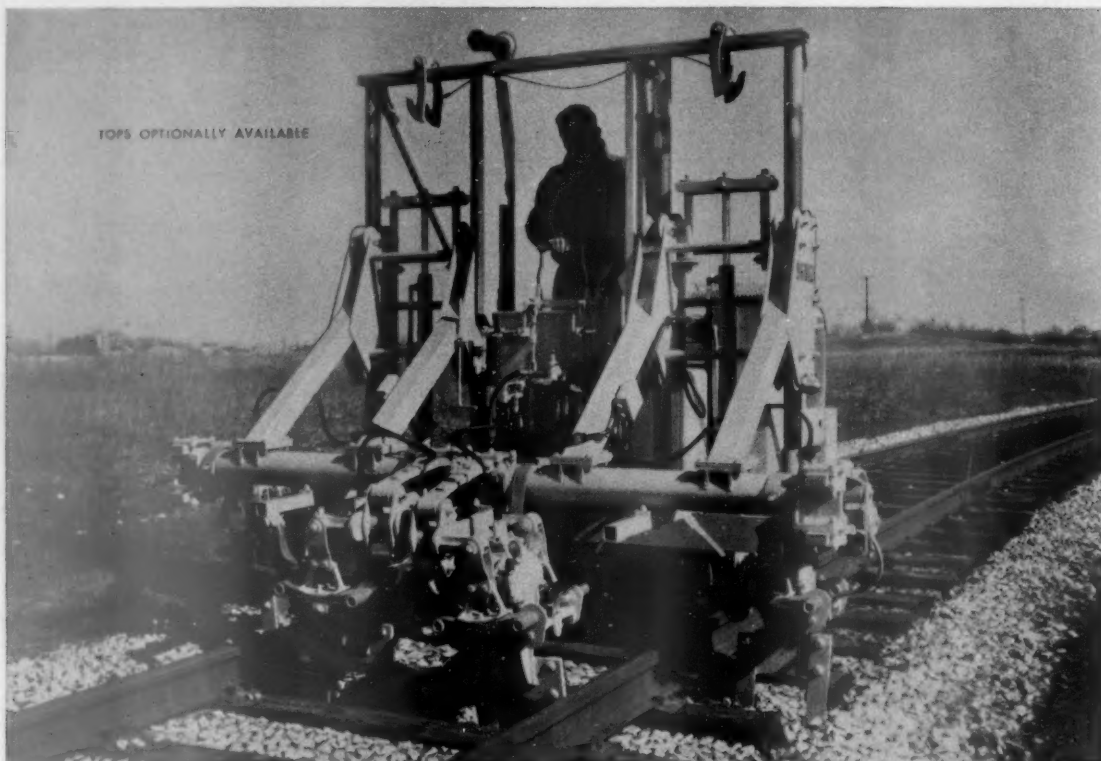
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2

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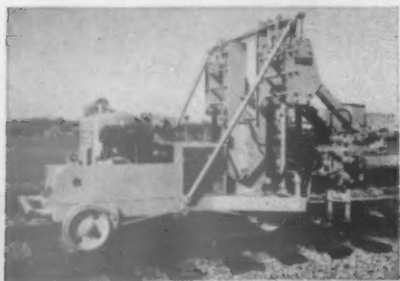
MODEL 104: Has gasoline engine and 4 TM1161 Vibratory Tamping Units. This is an excellent machine for work in all but the most difficult going . . . an ideal all-around tamper

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BOTH MODELS OPTIONALLY AVAILABLE WITH LIFTING JACKS

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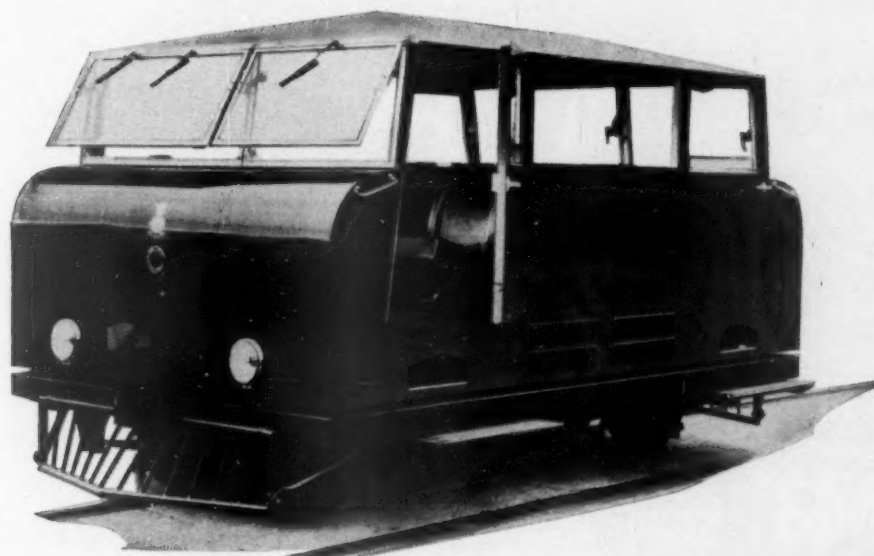


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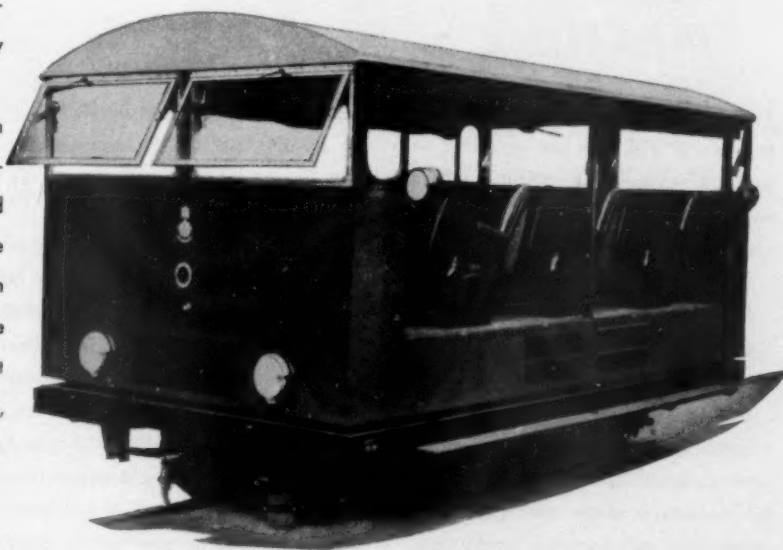
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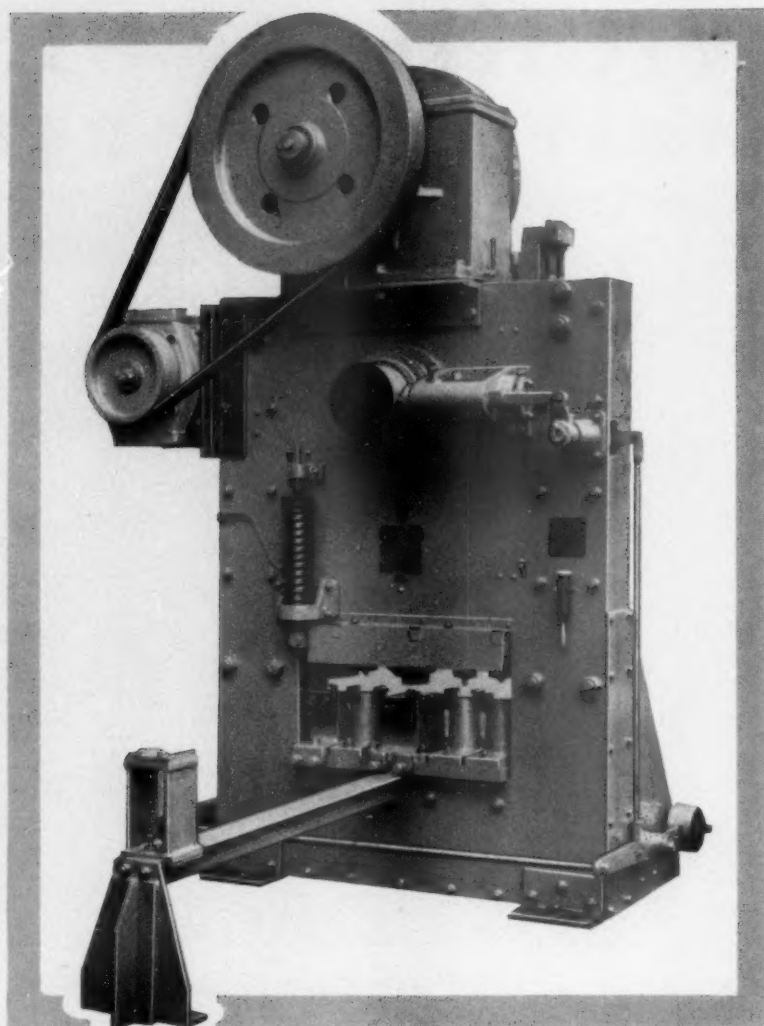
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- Nibbing bars.
- Punching oblong slots in bars.

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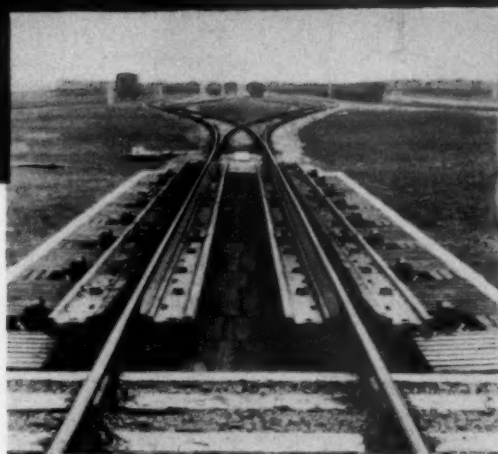
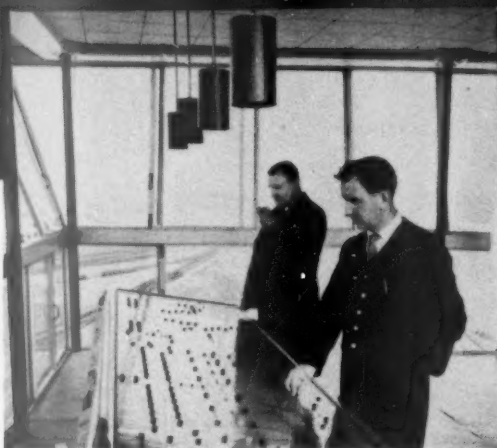
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AEI-GRS Equipment at Margam, British Railways, Western Region. (Left) Desk in control tower at Margam showing marshalling yard controls (nearest camera) and Type NX Route Relay Interlocking Controls for reception sidings at other end. (Right) View of secondary retarder. A radar head is visible at top of picture. (Photographs by courtesy of British Railways)



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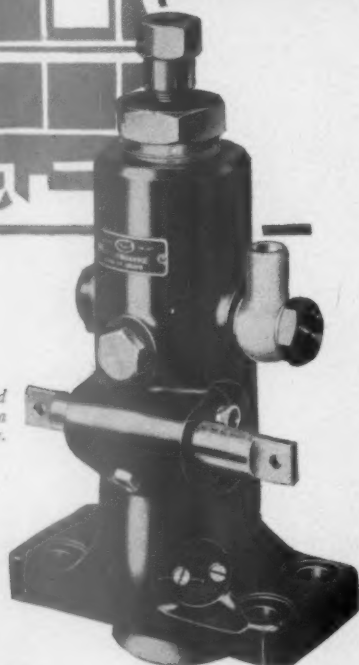
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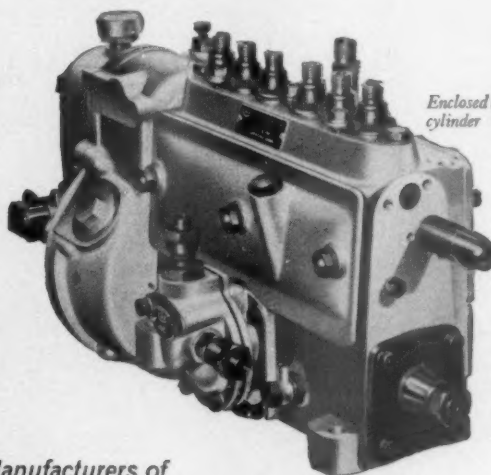


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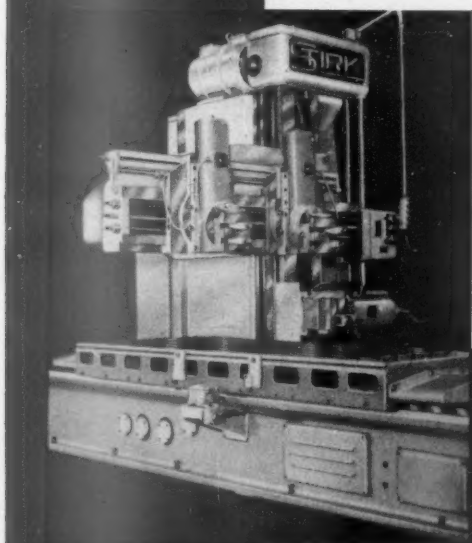
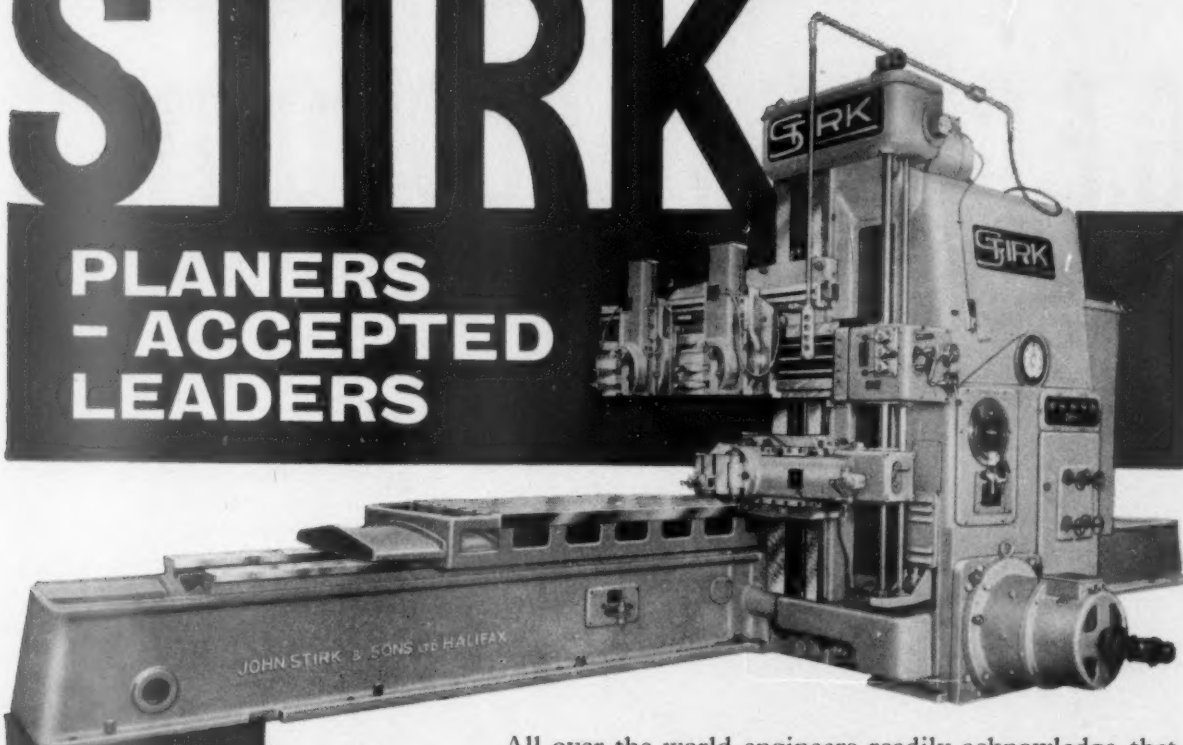
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This 100 mile/h. 25 kV a.c. locomotive is one of ten which G.E.C. has supplied to British Railways for express passenger and goods trains.

Mechanical parts were made by North British Locomotive Co. Ltd.

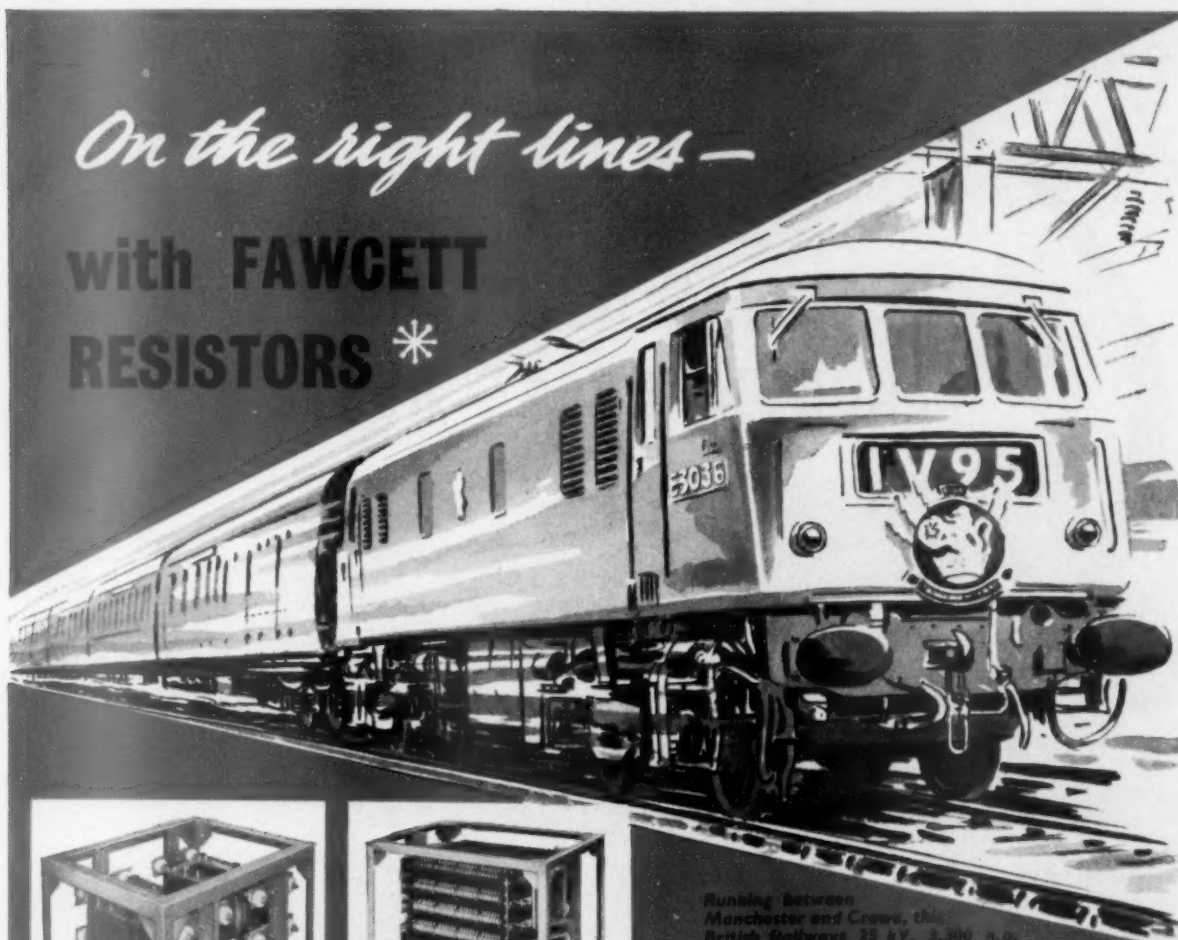
rely on the experience of

G.E.C.

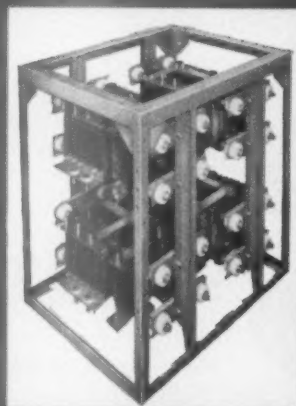
THE GENERAL ELECTRIC CO LTD OF ENGLAND • TRACTION DIVISION • BIRMINGHAM 6

375

On the right lines — with FAWCETT RESISTORS *

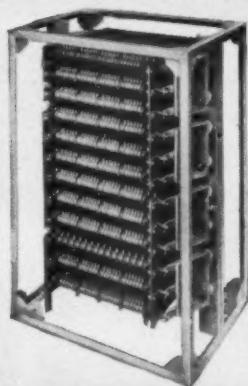


Running between Manchester and Crewe, this British Railways 25 kV, 3,300 h.p. electric locomotive, one of ten supplied by G.E.C., is the first of its type to operate a scheduled passenger service in the British Isles.



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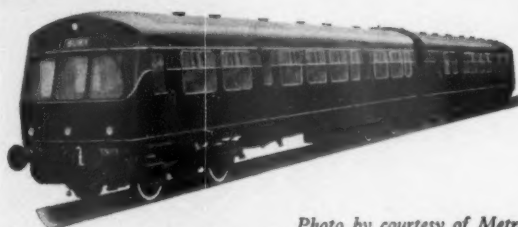
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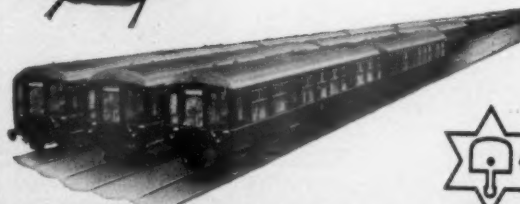
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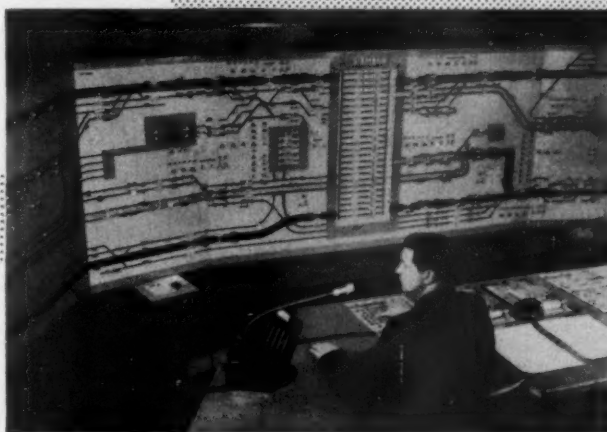
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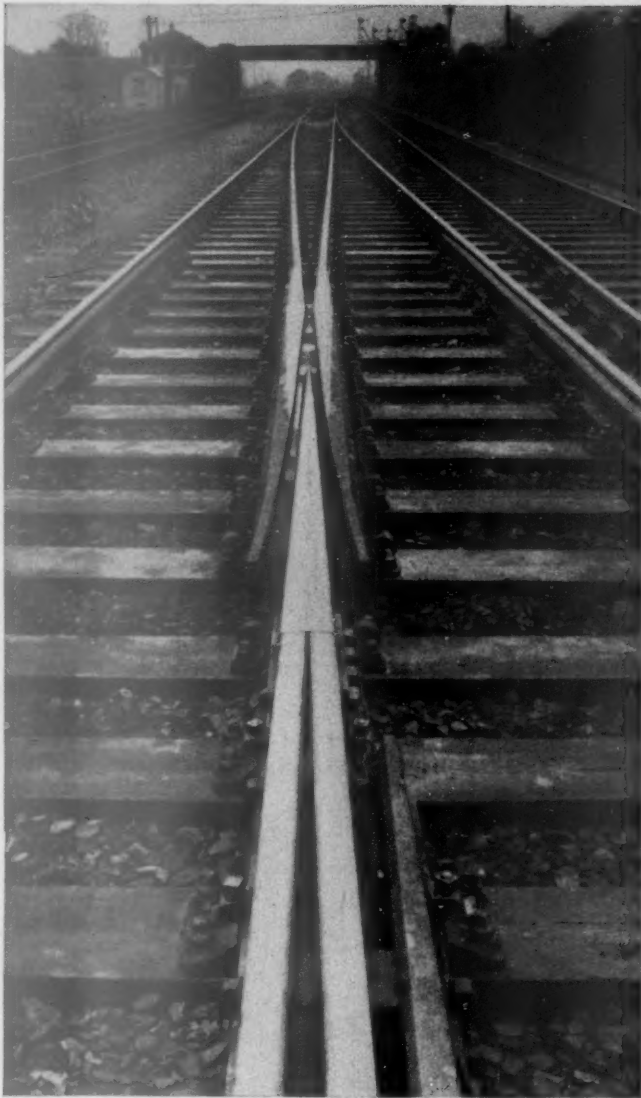
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Important Development!



Photographs reproduced by courtesy of
British Railways (Southern Region)

The accompanying illustration shows Solid Cast Monoblock Crossings of Hadfields Era High Manganese Steel, in situ at Worting Junction on the Southern Region of British Railways.

The Crossing angle 1 in 28, and approx. 25 ft. long, represents a new departure in the application of the cast monoblock type of Crossing, and is designed to carry heavy main line traffic at high speeds.

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WANTED



An adequate and commensurate REWARD will be paid for information leading to the recapture of the above office junior who is under the delusion that she has lost the address of **ASSOCIATED LEAD** and who now fears that her employers are unable to obtain supplies of **RED LEAD PAINTS & RUSTODIAN CALCIUM PLUMBATE PAINTS**. This girl is suffering from strong guilt feelings and may have assumed an alias.

This announcement is issued for and on behalf of

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MOVING IRON

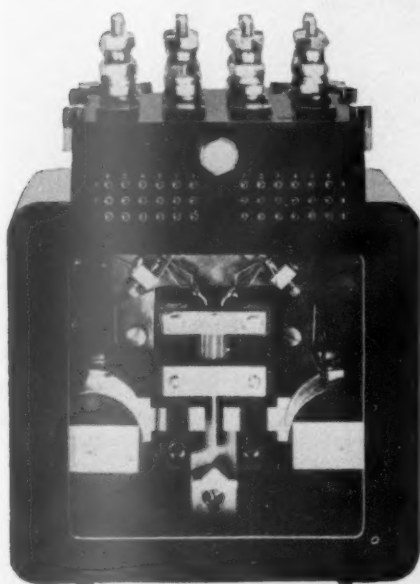
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conforming generally to the B.R. Specification No. 923

— SENSITIVE — RELIABLE — ECONOMICAL —

For many years Tyer's A.D. (arm detection) relay has been in vogue on the numerous signalling and telegraph systems of railways at Home and Abroad.

**TYPICAL OPERATION**

2 position, non-stick, 250 ohms
3 position, centre-bias, 1000 ohms

Size

With terminals fitted at top of case: W: $6\frac{5}{16}$ " x H: $7\frac{1}{4}$ " x D: $3\frac{1}{8}$ "
(Weight: $4\frac{1}{2}$ lb.).

With detachable terminal top: (Remax Limited). W: $6\frac{5}{16}$ " x
H: $8\frac{7}{8}$ " x D: $4\frac{7}{8}$ " (Weight: $5\frac{1}{2}$ lb.).

Terminals O.B.A.

Markings: R¹ & R² (Coil)

N (normal contacts) A (Arm) B (Back)

F (Front) R (Reverse).

Coil Extension pieces, adjustable.

Casework: Moulded bakelite, sealed and dustproof, with full-vision inspection window, suitable for wall or shelf mounting.

Magnet pole piece adjustable.

All contacts perfectly balanced in one plane.

Contacts: metal to metal, self-wiping with reliable contact pressure. Each contact limb provided with a keeper.

Contact screws self-securing, with, or without lock nuts.

Flexible connections between contact arms and terminals, capable of carrying 2 amps.

Contact Equipment: 1F/B, 1N/R, 1N, 1R, 2N/R, 2F/B or 1F/B—1N/R

Contact Clearance: Minimum of .02 in.

Contact Rating: 1 ampere continuous

Contact Pressure: N, R or F, approximately 2 grammes with current 50% in excess of P.U. value

Contact Resistance: Max. .25 ohm, with contact carrying .1 amp D.C. and relay energised

(Biased contacts. Max: .25 ohm when relay 10% of P.U. value)

The relay can be supplied with conventional O.B.A. terminals, mounted on a moulded panel incorporated with the main 'base' of the relay unit around which the full-vision glazed cover fits.

The terminal panel includes the terminal identification symbols moulded in relief:—

Coils: R¹ & R². Contacts: N, R, A, B and F.

Alternatively, the Relay can be supplied fitted with a detachable terminal top unit. This unit permits of all conductor leads remaining undisturbed on their O.B.A. terminals whilst the relay is removed for inspection or servicing. By incorporating 'interlocking' and terminal 'configuration' features it is impossible to fit or connect up a relay differing in contact and terminal arrangements. Hence, relays can be disconnected and re-connected without error or technical supervision. Such a unit minimises the time taken to change a relay in service.

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Established 1851

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22 into 4 will go!

Allow us to enlarge on this statement!
You are given a remote group of 22 subscribers.
You wish to connect them to a central control.
What is the least number of pairs of
wires required? Normally, the answer would be
22 pairs of wires. Now, however, the answer
is simply 4 pairs of wires. The equipment
that brings about the simplification is the
TMC EXTENSIBLE LINE CONNECTOR No. 1 —
which makes it possible for remote units
of between 10 and 22 subscribers to be
connected to a central control by only
2 or 4 pairs of wires — instead of between 10
and 22 as required by conventional means.
The system can be installed initially with only
2 junctions for 10 subscribers and extended
as the number of subscribers increases.
Yes, 22 into 4 will go — the TMC way!

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- No power requirements at the remote stations.
- Manual or automatic working without modification.
- Incoming and outgoing calls are the same as for directly connected subscribers.
- Reverive calls as for any other class of call.
- Can be used in tropical climates.
- Faults automatically indicated in the main exchange.

TMC
It's more economical, naturally

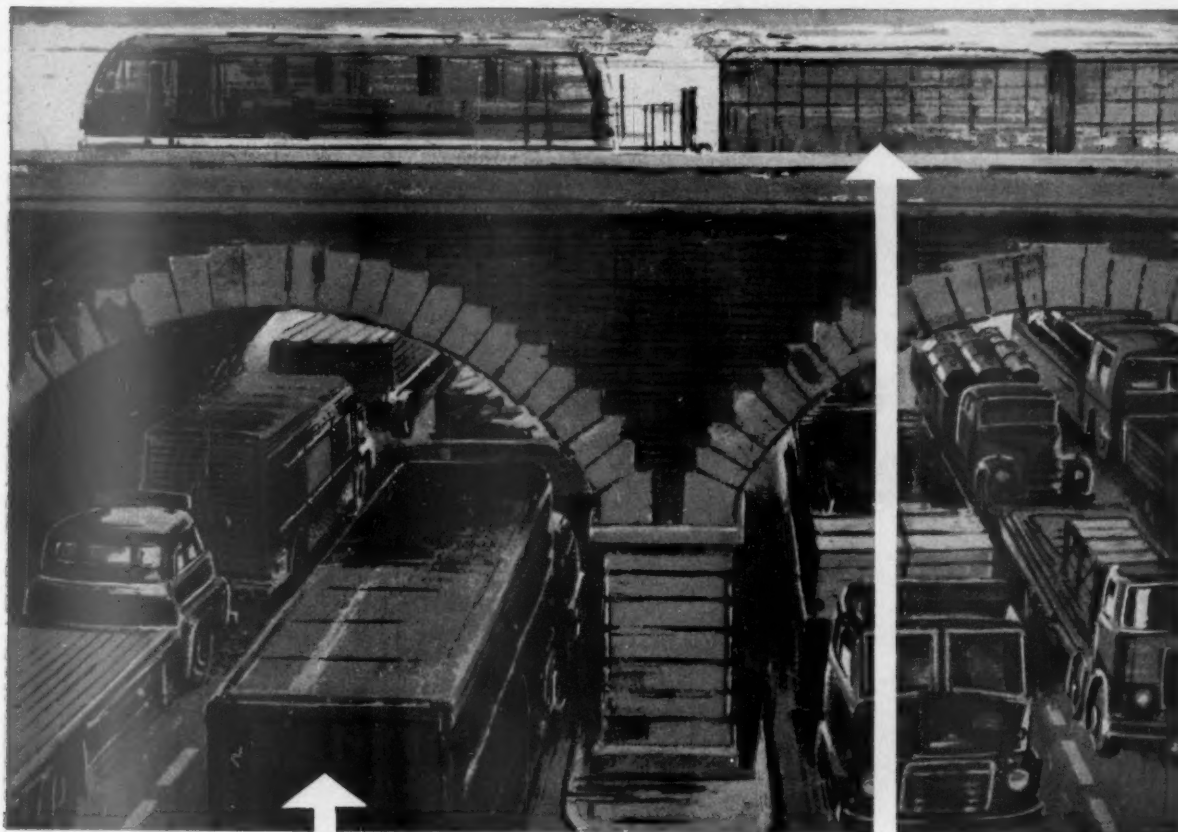
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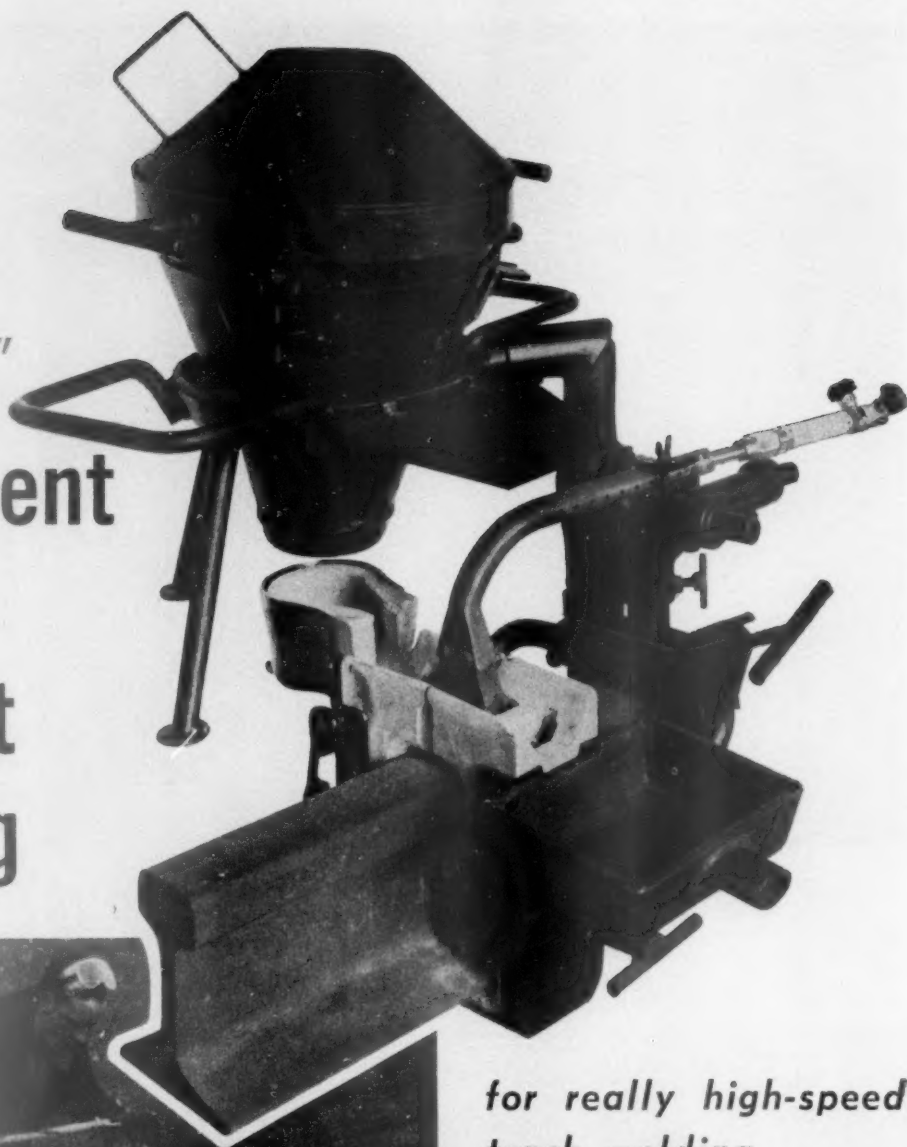
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*Railway Division,
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"Quick" process equipment is simple and easy to transport and can be operated by local labour under trained supervision—more reasons for economies in costs and time.

The top photo shows the Thermit Welding "Quick" Equipment set up ready for the charge. The other picture illustrates the self-contained grinding unit being used on the Western Region of British Railways.

THERMIT WELDING [Gt. Britain] LTD

340

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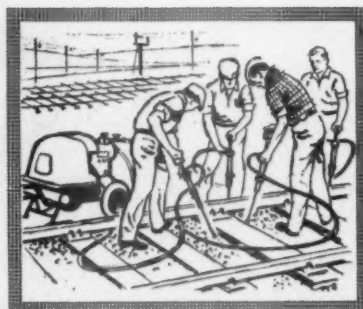
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Manpower . . . time . . . money . . . how much are you wasting with out-of-date methods of permanent way and bridge maintenance?

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98P100 can operate up to four tampers with power, speed and precision control.

Hymatic

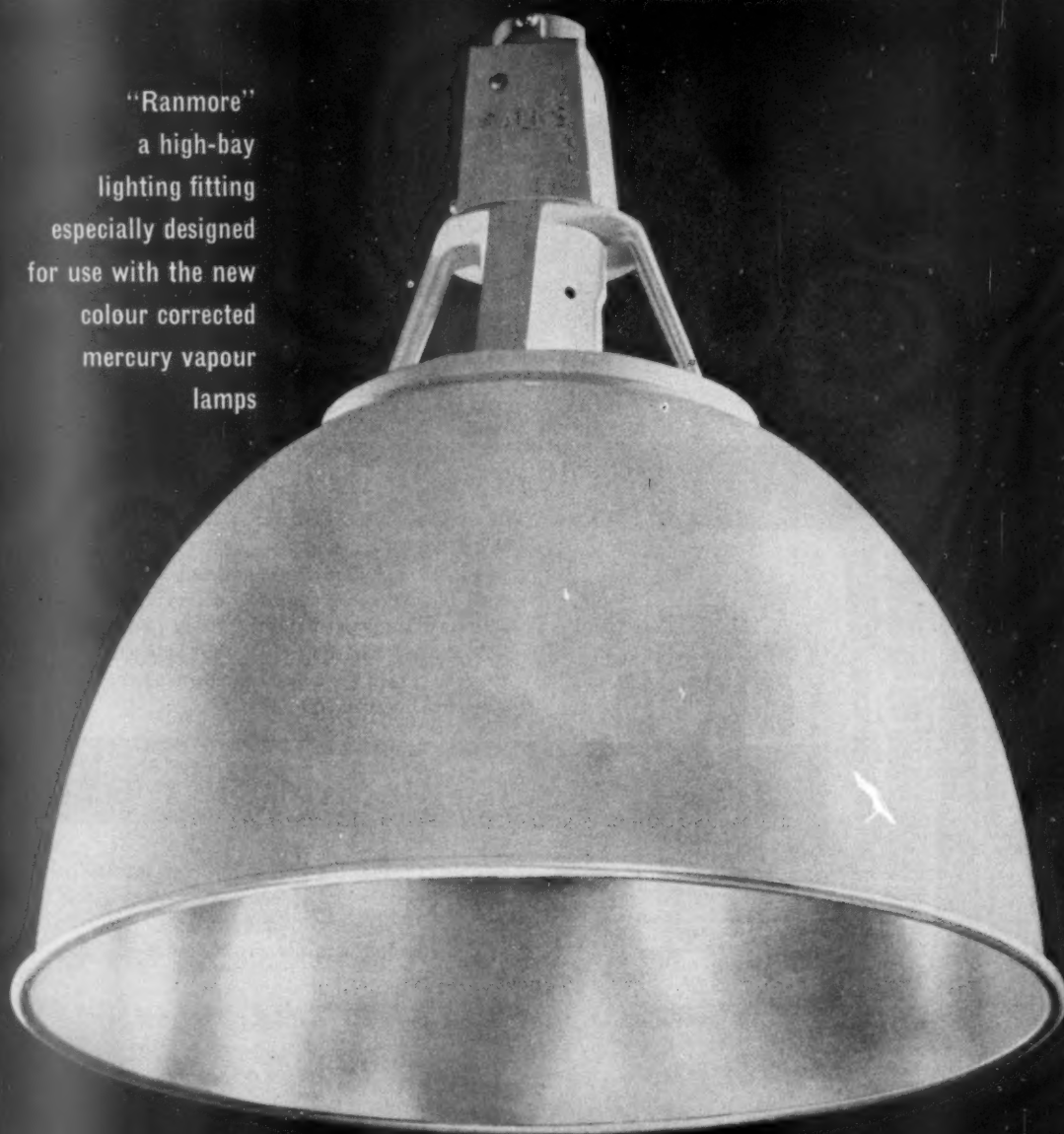
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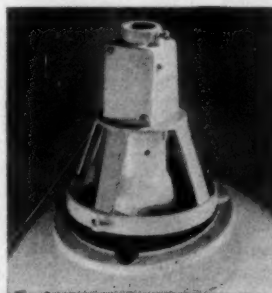
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for use with the new
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mercury vapour
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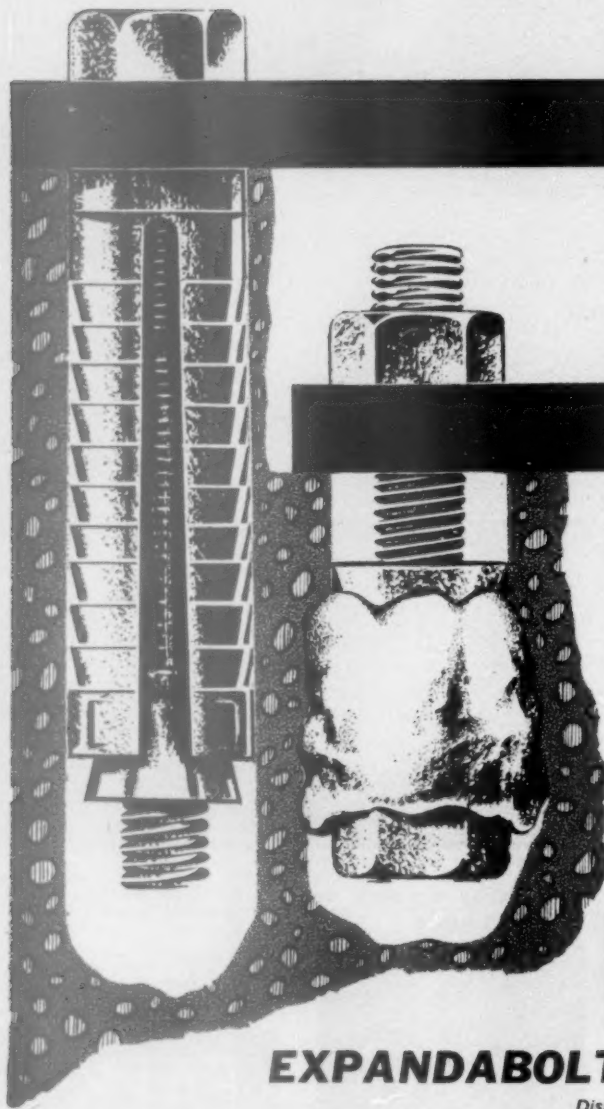
AND HERE'S HOW THEY WORK!

EXPANDABOLTS

A hole is made and the complete bolt (set screw, saw-toothed split-sleeve and cone wedge) is placed in it. The set screw is removed and the article placed in position. The set screw is reinserted and tightened. This draws the wedge into the split-sleeve, forcing the saw-teeth to grip the concrete.

ANCHOR BOLTS

A hole is made, the bolt is inserted and the wedge is driven into the lead spreader, thus locking the bolt in position. The article to be fixed is then placed over the protruding bolt, and the nut is tightened.



philplug

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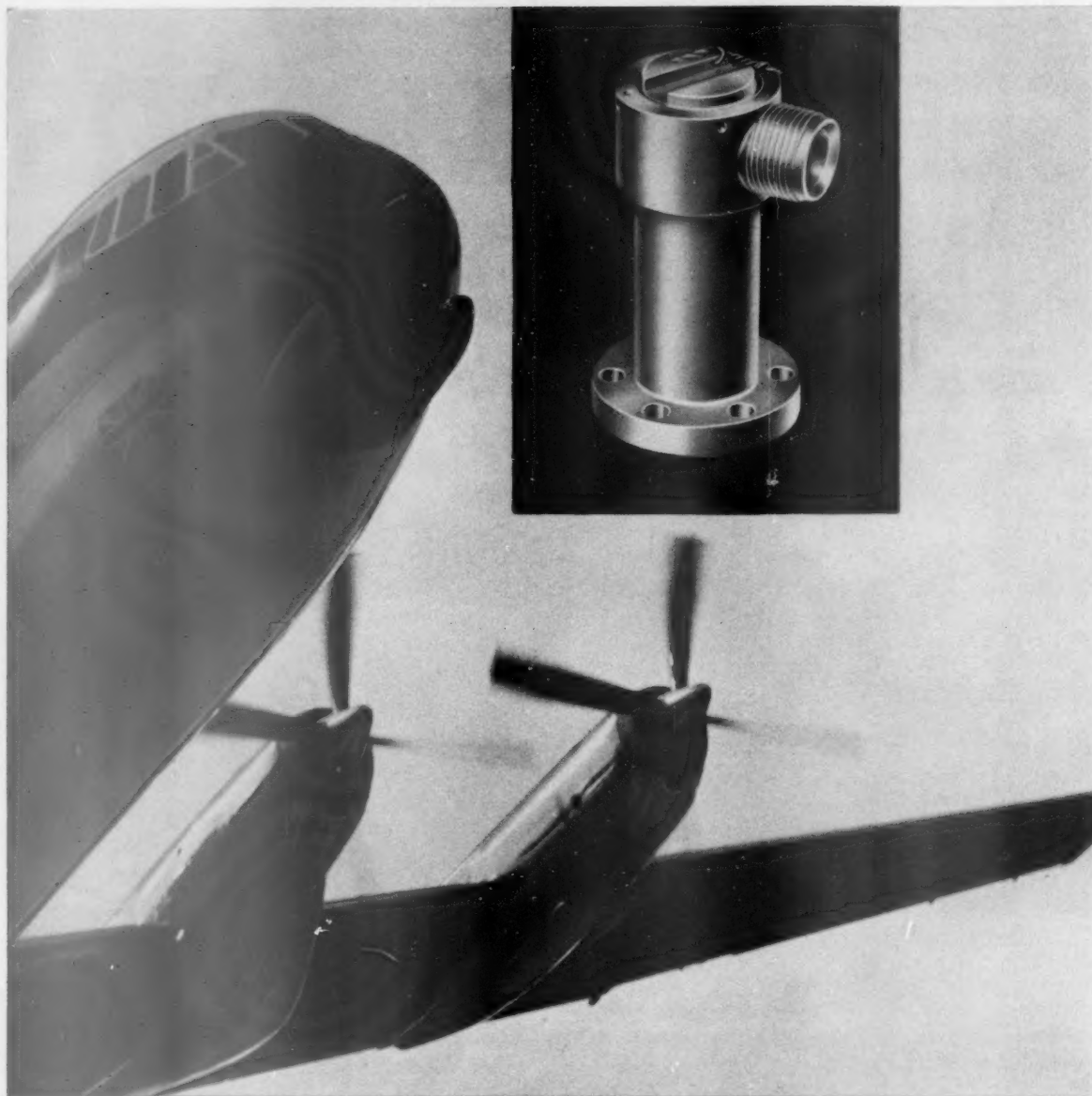
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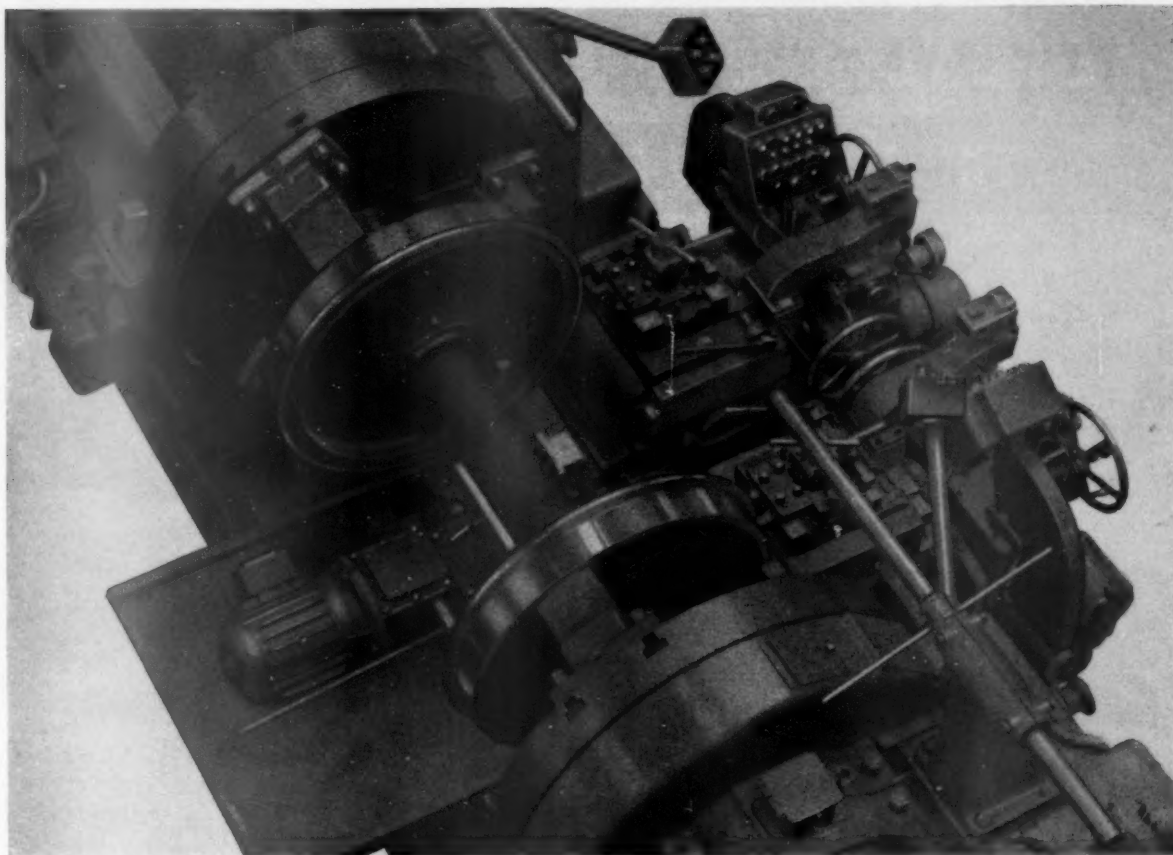
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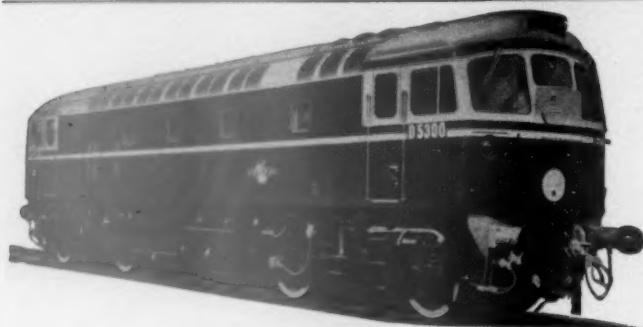
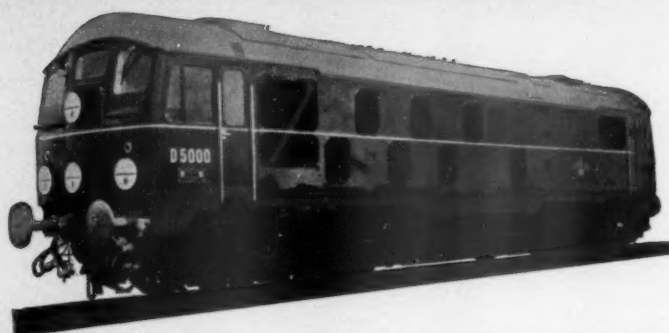
MODERN BRAKE EQUIPMENT

1160 H.P. Type '2' Diesel-Electric Locomotives.

Built by the Derby, Crewe and Darlington works of the B.T.C.

176 of these locomotives are to be supplied with Sulzer Engines and Power Equipment by A.E.I. Traction Division.

Metcalf-Oerlikon brakes are also fitted.



1160 H.P. Type '2' Diesel-Electric Locomotives.

Built by the Birmingham Railway Carriage & Wagon Co. Limited.

47 of these locomotives have Sulzer Engines and Crompton Parkinson Power Equipment.

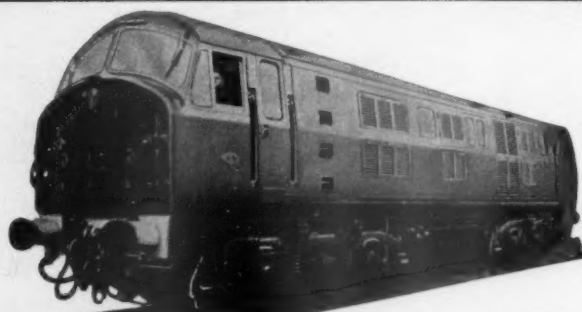
Metcalf-Oerlikon brakes are also fitted.

1100 H.P. Type '2' Diesel-Electric Locomotives.

Built by the North British Locomotive Company Ltd.

They have N.B.L./M.A.N. Diesel Engines and General Electric Company Power Equipment.

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The above are just three of the many types of Main Line Diesel-Electric Locomotives now in service with British Railways and all are equipped with 'Metcalf-Oerlikon' patent Vacuum Controlled Air Brake Equipment.

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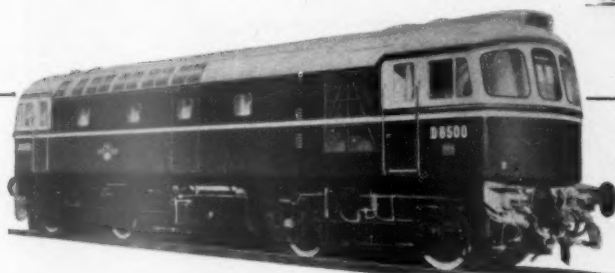
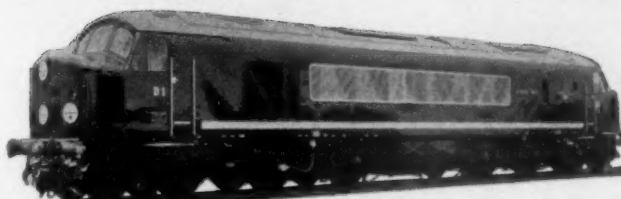
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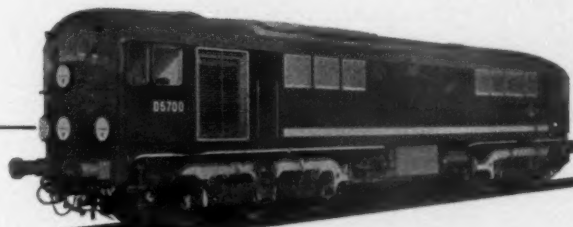
- 10 — 2300 H.P. Type '4' Diesel-Electric Locomotives. Built by the Derby Works of the B.T.C. and fitted with Sulzer Engines and Crompton Parkinson Electrical Equipment. 10 of these Locomotives are in service with British Railways and a further 137 are now building.



- 1550 H.P. Type '3' Diesel-Electric Locomotives. Built by the Birmingham Railway Carriage & Wagon Co., Ltd. and fitted with Sulzer Engines and Crompton Parkinson Electrical Equipment. 98 of these Locomotives are to be supplied, and these are arranged for working with either 'Vacuum' or 'Air' braked trains through a single Driver's Brake Valve.



- 20 — 1200 H.P. Type '2' Diesel-Electric Locomotives. Built by Associated Electrical Industries Ltd. and fitted with Crossley Brothers Ltd. engines. These Locomotives are now in service on British Railways.



- 52 — 1100 H.P. Type '2' Diesel-Hydraulic Locomotives being built by the North British Locomotive Co., Ltd. with N.B.L./M.A.N. Engines and Voith/North British Hydraulic Transmission.

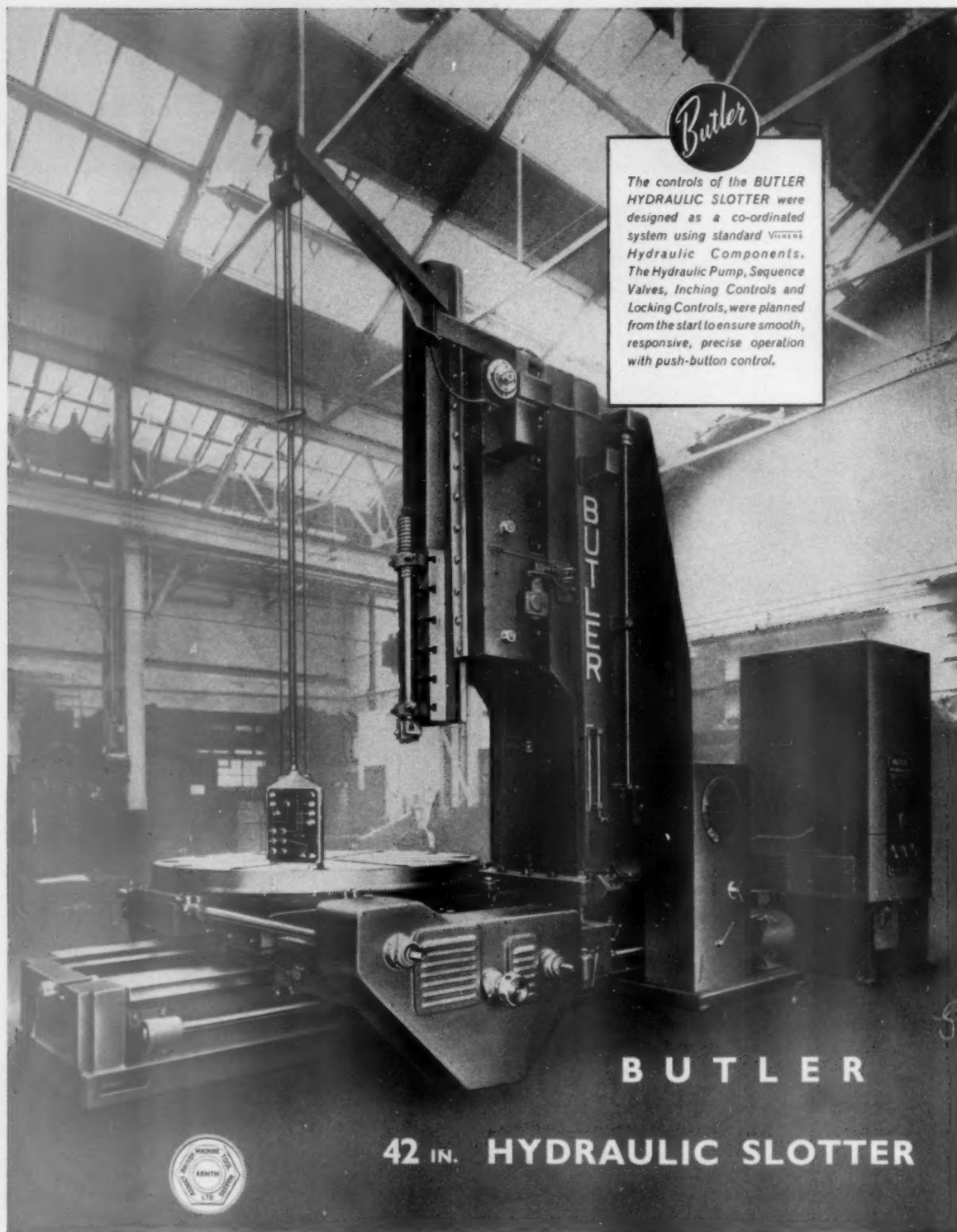


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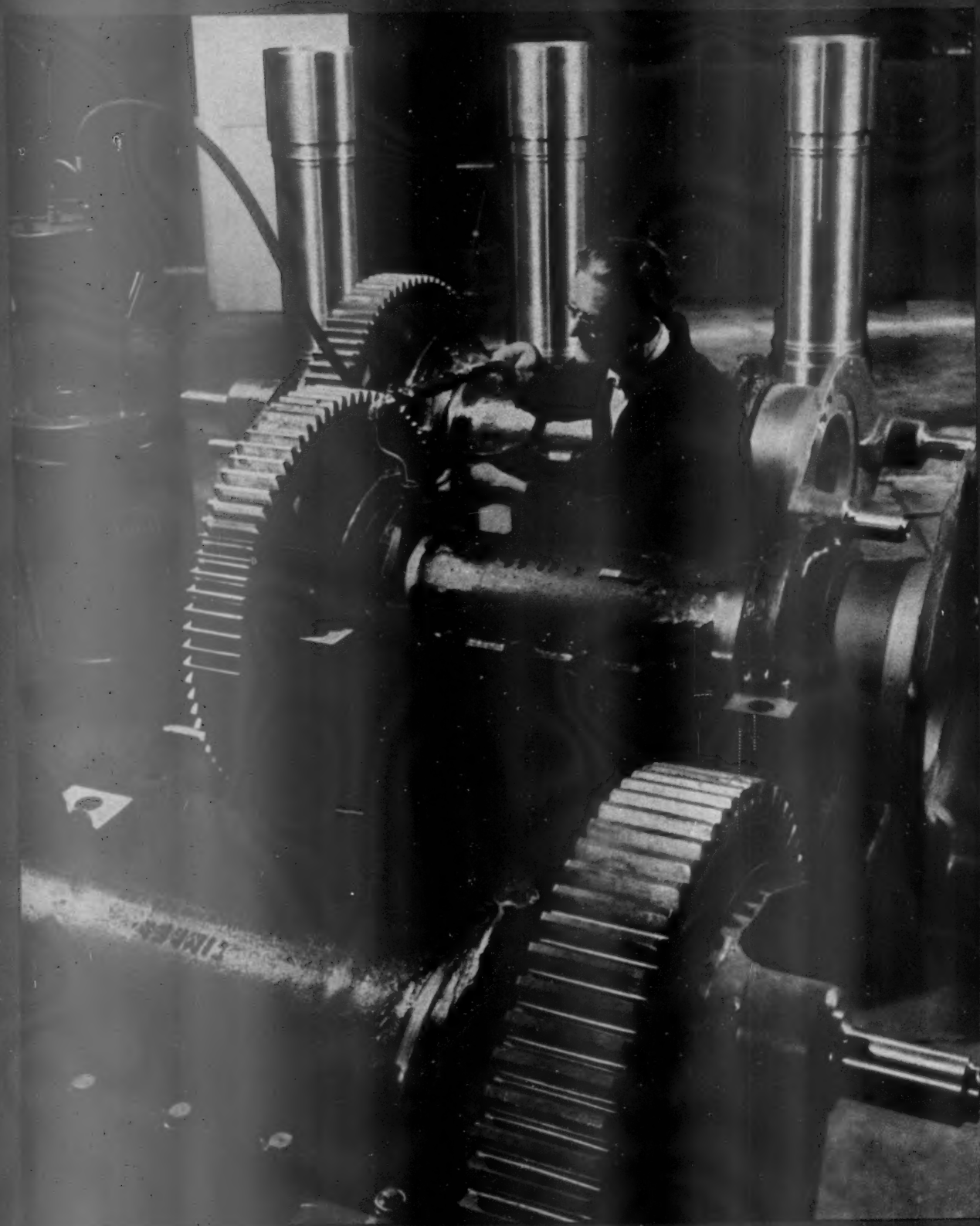
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A journal of Management, Engineering and Operation

VOL 115

FRIDAY OCTOBER 6 1961

No. 14

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Editor: B. W. C. Cooke, Assoc. Inst. T.

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several other Ministers, such as the President of the Board of Trade and the Minister of Labour, should be members. Other members would be appointed by the Chancellor from both trade unions and management in private and nationalised industry. A total membership of about 20 is the aim. The full-time staff would work under a Director to be appointed from outside the civil service, and the Government would be prepared to make available from the civil service an appropriate portion of the staff; the rest would be drawn from both sides of industry, the commercial world and elsewhere.

The importance of staff selection

It is perhaps encouraging to note that the Director is to be appointed from outside the civil service, but a good deal will depend not only on the man chosen, but also on the powers he is given and the staff which serves him. There can be no doubt that there is grave and well-founded apprehension among many industrialists that the cold hand of the civil service is far from being the most useful instrument to stimulate trade and, in particular, exports. Industry has had far too many examples of the difficulty in getting the trained public servant, admirable though he may be in his own sphere, to appreciate the need for enterprise and initiative and the taking of risks which are inseparable for the conduct of commercial business. At the present time in particular, when the need for exports is so great, a far more adventurous spirit and a far greater readiness to face the realities of the situation, both at home and abroad, is urgently necessary if success is to be achieved.

Prestressed-concrete bridges on B.R.

ON October 3, Mr. F. Turton, Assistant Engineer (Bridges), Chief Civil Engineer's Department, British Railways, London Midland Region, presented a paper at the Institution of Civil Engineers on the reconstruction of three railway bridges in Manchester, which carry the Stockport-Manchester line through the city. These bridges are thought to be the largest prestressed concrete spans yet built to carry main-line traffic. Each of them is skew in plan and the skew has been turned to advantage in design. Extensive use of rubber has been made in the principal bearings. Two of the bridges are of precast units assembled and prestressed alongside the site and rolled transversely into position, while the third one was cast *in situ* during a temporary closing of the line. Mr. Turton chose these bridges as the subject of his paper not merely because they are large structures but because it was felt that they incorporate principles not usually associated with railway underbridge practice.

Reconstruction for electrification

THE electrification of the main line between Crewe and Manchester, on the London Midland Region of British Railways, by the 25kV. overhead system, involved the reconstruction of many bridges carrying roads over railways, but the modernisation of the track associated with electrification also affects bridges under the line. Where this occurs in an intensively

Planning for industry

THE Chancellor of the Exchequer has now given details to the Federation of British Industries, the British Employers' Confederation, the Trades Union Congress, the Association of British Chambers of Commerce, and the National Union of Manufacturers of his plans to set up a National Economic Development Council. The first intimation of this proposal was made in August, but all that was known then was that the Chancellor proposed a two-tier council. The broad purpose is to establish new and more effective machinery for the co-ordination of plans and forecasts for the main sectors of the economy. The Chancellor feels that there is a need to study centrally the plans and prospects of the main industries, to correlate them with each other and with Government projects for the public sector, and to see how, in aggregate, they fit in with the prospects for the economy as a whole, including the external balance of payments. The Chancellor has decided that he will act as chairman and that

built-up area where the line is generally at or above street level, a considerable amount of underbridge strengthening or reconstruction may be necessary. This was the combination of circumstances which arose on the section of line between Stockport and Manchester. The way in which the problems were tackled, outlined in Mr. Turton's recent paper to the Institution of Civil Engineers, reflects great credit on the civil engineering staff of British Railways. The staging of the work meant that all the bridgework had to be completed within a period of 27 months, without interfering too greatly with the traffic on the road beneath, and while a full service was being maintained by British Railways on the line.

Automatic train announcements

AN interesting feature of the station opened at Barking last week is the automatic public address system. The announcements are actuated by the approach of a train, and are pre-recorded on magnetic tapes. The operator has an office in the signalbox and on being advised of an approaching train can select the required announcement by punching out a code number on a series of buttons on his control panel. This action positions a pickup head over the required track on an endless magnetic tape which accommodates 25 separate announcements. As the train passes a selected point the announcement is broadcast to the effect that "the next train to arrive at platform . . . will call at . . ." On arrival in the platform, the announcement is repeated but this time reference is made to "the train standing in platform . . ." During peak hours when the interval between trains is short, the first announcement is automatically cancelled. A description of the station is given on page 390 of this issue.

Carrying the coal

IN OUR news pages this week is the text of a personal message to the staff of British Railways from the Chairman of the British Transport Commission, Dr. Richard Beeching. For several winters British Railways has been unable to carry all the coal it has been offered because of staff and wagon shortages, and has been in the anomalous position of having to divert some of it to road. Coal has always been the lifeblood of the railways and is a good paying traffic; this year the railways are to make the effort to handle it themselves instead of paying their competitors to do it for them. Dr. Beeching's exhortation will be of no avail unless the National Coal Board, and the coal traders themselves, take heed of the necessity of making the most of the railway's stock of waggons. The N.C.B. labelling staff must play its part in consigning waggons correctly and clearly, and the traders must realise that, while it is perhaps cheaper to pay demurrage than to stack the coal, undue detention of waggons must make for higher costs.

B.T.H.A. report

THE annual report of the British Travel & Holidays Association for 1960 shows that tourism was Great Britain's fourth largest export during that year. Tourist earnings were £40 million higher than the export of electrical machinery and £55 million more than the overseas sales of motor-cars. The report goes on to state that Britain depends for its future prosperity on the development of its exports and on increased earnings from goods and services sold to the people of other countries. Invisible exports, it states, are an important factor in the balance of payments. The removal of passport restrictions from certain countries in Europe for visitors to Britain has increased the number of visitors by as much as 40 per cent in some cases. One of the significant facts brought to light in the report, so far as travel trends in this country is concerned, is that in 1960 47 per cent of holiday-makers went away by car as against 27 per cent in 1961. Out of a total tourist expenditure of £273 million, the railway's share was £20 million.

Planning of traffic

OVER 1,000 delegates attended a "Planning for Traffic" convention held by the Institution of Municipal Engineers in London on October 5. As might be expected, a great deal of the discussion turned on road services, but Mr. C. W. King, Chief Civil Engineer, British Railways Central Staff, dealt at some length with the future role of the railways and stressed the need for the maximum need of co-ordination of future planning for both roads and railways. This would ensure that the limited capital available was spent in the best way and that the country reaped the maximum benefits. So far as passengers were concerned, he felt that main-line train services could well be coupled with greatly expanded car-hire facilities. In any case, he emphasised, they must be linked to much larger car-parking spaces. He felt there was also scope for expansion of the present car-sleeper and car-carrier services over long distances. If full advantage were taken of the improved efficiency and increased capacity of the railroads as they were now being modernised, much more traffic could be carried.

British Railways order more equipment

THE British Transport Commission has ordered another 27 complete main-line diesel locomotives and some further equipment, including diesel engines and transmissions, for multiple-unit trains. The locomotives will be based in the Hull and Sheffield areas, and the diesel sets are for an inter-city service between Swansea and Birmingham. The value of these orders is some £2½ million. Of the locomotives, 17 are for the North Eastern Region. They will have diesel engines of 1,750 h.p., and are to be delivered from October 1962 onwards. The other 10 locomotives, with engines of 1,365 h.p., are for the Eastern Region and will be delivered early next year. All these locomotives will have electric transmission in which the diesel engine drives a generator to provide electric current for traction purposes. The diesel engines and transmissions, together with 20 sets of control equipment, are to equip 10 four-car multiple-unit trains to be built in the railway workshops at Swindon. They are for the Western Region's proposed inter-city diesel service between Swansea and Birmingham.

U.I.C. quiz booklet

THE International Union of Railways (U.I.C.), has issued a very useful booklet produced, on its behalf, by the Information & Publicity Centre of European Railways (U.I.P.C.E.). The booklet, which is in the form of a quiz question and answer, is printed in 10 languages, and is intended for distribution to young people. With the answers to such questions as "Which European country has the densest railway network?" and "What is meant by passenger-kilometer and ton-kilometer respectively?", the most enthusiastic seeker of railway knowledge would seem to have been catered for. There are plenty of illustrations of rolling-stock, stations, installations, and equipment, a list of which has been included in the back of the book. The inside of the cover comprises a map of all the European railway systems. Though the booklet is primarily aimed at the young enthusiast with the object of fostering and increasing interest in railways there is no doubt that it is of interest and will be a generally useful book of reference.

Progress at Healey Mills

THE latest progress report of the North Eastern Region of British Railways on the work at Healey Mills marshalling yard, four miles west of Wakefield, which is dealt with in detail in our news pages this week, is encouraging. The foundation of the yard, the preparation of the site and the installation of the sidings, is well advanced and the installation of the technical equipment can now begin. The contract recently placed with the

Westinghouse Brake & Signal Co. Ltd. will take care of the power operation of marshalling yard points, signals and retarders, and power signalling on the main line. A lot of work yet remains to be done; the complex shunting equipment controlling shunting operations within the yard involves the provision of 68 electro-pneumatic point machines of the direct acting type, and 148 track and rail circuits for controlling the retarders and points. Nevertheless, when the work is completed all the rail traffic between Yorkshire and Lancashire will benefit from the expeditious handling it will receive.

B.S.I. record year

DURING the year 1960-61, the British Standards Institution has published over 300 new and revised British standards and the sales have risen to 1,158,000, of which about a quarter were overseas sales. In presenting the accounts for 1960-61, Mr. G. Cunliffe, the newly elected President of the Institution, pointed out that a large increase in resources was needed if the B.S.I. was to meet the demands made on it efficiently, and if that increase was not forthcoming then a system of priorities would have to be introduced. Mr. Cunliffe stressed the increase in the scale of international standards and the importance of Britain playing a full part in it. It was likely that activity in connection with the unification of standards in Western Europe would expand, particularly if this country entered the Common Market. In the Engineering Division three standards committees had been set up on nuclear energy, data processing, and surface coatings the uses to which materials were being put had called for a fresh study of the treatment of surfaces.

Swedish State Railways in 1960

It is difficult to say whether the Swedish railways made a profit in 1960. The year closed with a surplus of 216.6 million Kr., but out of this amount, amortisations still had to be paid. For the budgetary year 1960-61, amortisations ran up to only 186 million Kr., but then this period does not cover the year 1960. Passenger traffic over short and medium distances suffered heavily from private motorcar competition. Over long distances, more passengers were transported, the system of free parking space on stations being pushed ahead. Freight traffic, at 43 million tons, increased by 12 per cent. For door-to-door transports, an adapted version of the Clejan Piggyback system is now offered between Stockholm, Gothenburg, Malmo and Helsingborg. Palletisation increased at a heavy rate. For the iron ore traffic from Lappland to Harwick, three heavy three-unit electric locomotives were tested.

Track circuit insulation

THE publication of a revised edition of B.S.456, the British Standards Specification for Dimensions of Track Circuit Insulation, underlines the changes in this facet of railway signalling practice that have taken place since the first edition was published, in 1932. The standard now covers insulations for all rail sections above 85 lb. per yd. bullhead and above 70 lb. per yd. flat-bottom as specified in the appropriate British Standard. Insulations for the lighter-rail sections are not included, for although these rails are in common use on narrow-gauge lines, industrial railways, and in collieries it is rare that such lines include any track circuiting. The specification includes insulation for point stretcher bars and side plates and the modern solid fishplate-type of insulation, which is preferred by some railways to the original channel-type of fishplate insulation used in connection with ordinary steel fishplates suitably planed to accommodate the insulation. That the revised B.S.456 is more than a mere reference booklet of dimensions is shown by the inclusion of three useful appendices: one giving the information needed by a manufacturer for dealing with an enquiry or order; a second giving dimensions of insulations for rail sections now

superseded, and a third providing guidance as to how the standard end-post insulations may be suitably modified to prevent or minimise the accumulation of metallic dust in underground railways, and tunnels.

Subsidies for U.S. railways?

AS recorded in our last week's issue, the Interstate Commerce Commission recently advocated direct Federal subsidies to sustain essential railway passenger services. Its recommendation arose out of its investigation into the difficulties of the New York, New Haven & Hartford Railroad and was proposed before a hearing before the Senate Interstate Commerce Committee. Subsidisation was to be confined to passenger traffics and it was estimated the plan would cost initially \$52 million a year.

Among the reasons given by the I.C.C. to justify its recommendation was the over-riding one that the enormous increase in population had intensified a shift of population from rural and smaller communities to urban areas and particularly to the large metropolitan conurbations, with the resultant spread to sprawling suburban areas. The Commission concluded, therefore, that rail commutation service would be far more essential and much more widely used ten years hence. It was also of the view that with the growth of urban conurbations intercity rail transport would become increasingly competitive with air. Since rail facilities once lost could not be reconstructed except at a fantastic cost, it considered it would be the height of folly to determine the essential rail services that should be maintained on the basis of their present use and without regard to future needs.

Presumably because of the general dislike of State subsidisation of private enterprise that is prevalent in the United States, the I.C.C. qualified its recommendation by reaffirming its deposition to them in principle but justifying an exception in this case because of the inequality of competition between road and rail. It stated that over a long period the Commission had expressed serious misgivings with regard to inequitable policies as between different forms of transport and, since there was little likelihood of speedy elimination of direct and indirect subsidies which operated unfavourably for the railways, there was no alternative but to assist them financially to enable essential passenger services to be maintained. Thereby the Federal Government would be recognising its obligation to pay for a portion of the cost of maintaining the railways right-of-way in the same way as it did in regard to the maintenance of airways and roads.

The subsidy would be fixed in relation to the assistance already given by State and local governments which is mainly by way of tax and rate relief. If such assistance rose then that of the Federal Government would be increased also. In the first year on these present reliefs the cost would be \$52 million.

To ensure that the efficiency of the railways was maintained and not undermined by Government aid, the Commission recommended nine conditions as follow:—

1. Federal aid should not dull managerial incentives to cut losses.
2. No aid programme should require the Federal Government in the interest of protecting the public purse, to establish passenger train schedules, or to prescribe standards of services and equipment.
3. Administration of the aid programme should not require the services of more than a handful of additional Government employees.
4. The sums to be disbursed should be determined primarily in accordance with a generally accepted formula and should involve a minimum exercise of discretion.
5. The programme should encourage the extension of tax relief and other assistance by State and local Governments.
6. The amount of aid should not be so large as to encourage the continuance of passenger operations not required by the public convenience and necessity.

7. The amount of Federal aid should be large enough, in conjunction with State and local assistance, to insure the continuance of passenger operations required by the public convenience and necessity.
8. The total cost of the programme should be realistic when viewed in the light of general budgetary considerations.
9. The programme should be sound in concept.

The Commission also viewed its recommendations in the light of the cost of alternative transport and of defence. As to the former it found that although rail passenger services were generally unprofitable for the railways, it seemed to be still the most economical and efficient means of suburban mass transport, when all costs were taken into account. As regards requirements of defence, it pointed out that in the event of war greater passenger carrying capacity would be required for both military and civilian travel than would be available if the present trend towards curtailment of lines and services continued.

Its final words linked the railways to the space age in that it concluded: "A nation that is serious about propelling a man to the moon should be able to solve the mundane problem of moving its citizens dependably and comfortably some 50 miles or less from home to work without multiplying ribbons of concrete and asphalt that would strangle the central cities they are supposed to serve."

Standard gauge to Perth, W.A.

AS long ago as 1903 the Western Australian Government passed legislation approving the construction of a railway of the same gauge as that projected from Port Augusta, in South Australia, to Kalgoorlie, to connect Kalgoorlie, in the east, with Perth and Fremantle, on the west coast. There was, however, a stipulation that work upon the line from Port Augusta should begin within five years, and as it did not, the matter was shelved for several decades.

Subsequently, various committees were appointed and reports presented on gauge standardisation generally throughout Australia. Three of them are noteworthy. In 1921 a Royal Commission on Standardisation was appointed jointly by the Commonwealth and State Governments. One of its suggestions was a standard gauge line (4 ft. 8½ in.) from Kalgoorlie to the West Coast, but no agreement was finally reached.

Influenced by defence considerations the Commonwealth Government appointed in 1944, Sir Harold Clapp, then Chairman of the Victorian Railway Commissioners, to report on standardisation of gauges. His report in 1945 recommended the construction of an independent standard-gauge line from Perth to Kalgoorlie at an estimated cost of about £A.8,350,000, but this again was never acted upon.

In 1956, a committee of members of Parliament under the Chairmanship of Mr. W. C. Wentworth was convened, to consider the practicability and desirability of standardisation. After making extensive investigations and enquiries, this committee also concluded that Kalgoorlie and Fremantle should be connected by standard gauge via Perth.

This Wentworth Plan, unlike the earlier reports mainly directed toward widespread conversion of complete systems to standard gauge, concentrated on the connection of all the mainland State capitals by a through trunk route of this gauge. In fact, this would run from Brisbane south, to Sydney, Melbourne, Adelaide, and Perth. It was thus a far less ambitious and much more workable alternative solution of the problem and will be solved as from Brisbane to Melbourne by the end of this year.

The Western Australian part of the Wentworth Plan is also now to materialise, thanks to the development of an iron and steel industry in that State. The iron ore is about 300 miles from the port and existing steel rolling mill at Kwinana, about 12 miles southwards down the coast from Fremantle. The ore deposit is only 33 miles north east of Southern Cross, a station on the Perth-Kalgoorlie section of the Western Australia

Government Railways on which system Kwinana is also situated.

In fact, Broken Hill Pty. Co., Ltd., owner of the Kwinana steel mill is to establish a £A.44 million fully-integrated steel industry there by 1978. The potentialities of this development as affecting the prosperity of the State and its increased relative importance in the Commonwealth were obvious. Recognising them and the need for the best possible communications both inter-state and for the carriage of the ore, the Commonwealth and State Governments signed an agreement on August 26, 1961, for the conversion of the gauge from 3 ft. 6 in. to 4 ft. 8½ in. between Kalgoorlie and Kwinana at a cost of £A.41,200,000.

The conversion will remove another gauge-break obstacle to efficient continental transport and is therefore of national significance. When the Port Pirie-Broken Hill line is standardised, leaving only Adelaide to be brought into the Wentworth-advocated capital-city network, Western Australia will have cheaper and speedier access to markets in other States for its increasing range of products. The line is likely to have a dramatic effect on the State's railway finances.

Between them the two projects will inject £85 million into the State's economy in the next 17 years. The immediate effect of this will be to create a big demand for labour both directly and indirectly. The conversion, which is to be completed in 1968, will have a peak labour force of about 2,000. It is important that the State Government and the steel company should advance their projects as quickly as possible to relieve unemployment.

In a joint statement, the Prime Minister and Mr. Brand said: "It is the most important industrial project ever negotiated for the western third of Australia, as well as one of the greatest industrial undertakings sanctioned for many years in the Commonwealth. Western Australia will get a great basic industry with high export earning potential. It will facilitate industrial development and economic growth and balance in this important part of the Commonwealth."

The joint statement said that the two Governments had agreed that the cost should be divided into two equal parts. For standardisation, the Commonwealth would provide all the finance initially. The State would undertake to repay 30 per cent of this, with interest, over 50 years. For development, the Commonwealth would provide 70 per cent and the State 30 per cent of the money initially required. The money provided by the Commonwealth would be repaid with interest by the State from its revenue over 20 years from the date of completion of the project. The Commonwealth would provide £35 million (85 per cent) of the initial cost and the State the balance. With the State contributing £6,200,000 for standardisation, and repaying £20,600,000 from revenue for development, the ultimate sharing of the cost would be: Commonwealth £14,400,000, W.A. £26,800,000.

For its part, Broken Hill Pty. Co., Ltd. (B.H.P.) has agreed to process up to 3 million tons of iron ore a year from the Koolyanobbing deposits near Southern Cross. Furthermore, the company is legally bound to establish a blast furnace with a capacity of at least 450,000 tons of basic iron a year at Kwinana by 1968. Its construction programme also calls for expansion of its existing Kwinana steel bar rolling mill to bring total capacity up to not less than 330,000 tons a year. Additional wharf facilities and ancillary plant and other developments are also planned.

Railway mechanical engineering problems

THE future of railway mechanical engineering, in the light of the changing pressures which were never more apparent than at the present time, were dealt with on a very broad basis by Mr. F. T. Barwell before a meeting of the Railway Engineering Group of the Institution of Mechanical Engineers on Wednesday last. Mr. Barwell, who is Chairman of the Group, is Electrical Engineer (Research) of the British Railways Division of the British Transport Commission and as such

comes into contact with a very wide range of engineering and allied problems. Probably it was for this reason that in his paper he did not attempt to deal at length or specifically with any one problem, but confined himself rather to dealing very briefly with a large range of the kind of complexities which almost certainly will face the railway mechanical engineer in the immediate, as well as the long-term, future.

Mr. Barwell is probably right in his assessment that the railway of the future must find its place in a rather flexible way between other forms of transport. Unless the railways can offer a more economic solution, it may at some time in the future be possible for coal and minerals to be transported by pipeline. The author suggested that it was possible that traffic would fall broadly into two categories. In the first would be heavy freight flowing on predetermined paths, such as between mine and power station or works and dock or even works and works, where private sidings were used and special purpose self-discharging wagons would be required. In the second category would be general merchandise, where the problem of loading and transferring goods from one vehicle to another dominated.

There can be no doubt that the Railway Engineering Group has an ample programme before it. When he was first invited to assume the chairmanship, Mr. Barwell made a note of some of the topics that would come within its field and on which important technological changes might be expected within the course of the next few years. These included interaction between wheel and rail (including adhesion), riding of vehicles, braking, automatic control, power units and transmission, lightweight construction, heating, ventilation and air conditioning of passenger vehicles, insulation and refrigeration of freight vehicles, methods of achieving interchange of freight between rail and road, lifting appliances, ancillary machinery, organisation and equipment of works and depots, and mechanical aspects of electrification including current collection.

As to passenger working, Mr. Barwell gave some interesting examples of how the continued expansion of cities had led to daily tidal flows of traffic which are unlikely to be dealt with adequately by means of the private car and the air-line. In the case of the former competitor to the railways, Los Angeles provided an example of the state which could be reached. There, some two-thirds of the central area were taken up either by roads or parking facilities. Certain city authorities in the United States of America were becoming increasingly aware that they could not solve their problems by extensive road construction, and were, therefore, looking to the railway for a solution.

The most radical proposal was to be found in San Francisco. An authority had been set up known as the "San Francisco Bay Area Rapid Transit District," representing the whole of the local authorities in the conurbation. It had prepared a plan for a rapid transit system on full railway standards. The system had been designed to compete successfully with the private car and for this reason had high operating standards. Trains would average 45 m.p.h. with a top speed up to 80 m.p.h., stations would be spaced at about 2½ miles and trains would make a 20-sec. station stop. It was expected that a 90-sec. headway would operate during rush hours and during non-peak periods the maximum interval would not exceed 15 min. Trains would be programmed and controlled by a central digital computer. Operation would be automatic in so far as the attendant aboard would be able to stop the train but not to start it.

The cost as now planned was \$926,000,000, but this was estimated to be increased to about \$1,000,000,000 by the inflation which would occur during the period of construction. It did not include a 4-mile tunnel which had already been authorised and would cost \$127,000,000. It was expected that the system would be self-supporting within 10 years when the traffic would be 125 million annual passenger journeys. It was estimated that the carrying capacity of the railway would be 30,000 seated passengers per single track per hour.

Norwegian State Railways in 1960

THE N.S.B. increased its receipts by 11 per cent and, as expenses rose only 1 per cent, the deficit could be lowered 22 per cent. However, the deficit of 137.5 million Kr. still amounted to 30 per cent of the aggregate receipts. Rationalisation permitted a stop in the recruiting of personnel since 1957; in 1960 the number of personnel sank by 1.3 per cent to 23,195 people. Wagonload traffic increased 7.3 per cent., tariffs 10 per cent. The results of the new tariff system, based on tons transported, were good. This tariff was started on the 457 new line Oslo-Andalsnes, where road competition is particularly heavy. The departure of the *ad valorem* tariff on the whole network is being studied. Steam traction ran 24 per cent of total freight train kilometers; 5 per cent of passenger train km. The price of single tickets was raised 15 per cent., of commuter tickets 29 per cent. In some Oslo morning trains, passengers can profit from lessons in foreign languages. The Hallingskeid anti-snowslide roof on the Oslo Bergen line (altitude 1,110 m., length 500 m.) was destroyed by fire. The upkeep of normal traffic on the line was no easy task. Modernisation of signalling included installation of 16 all-relay ports. Of the 4,358 km. network (of which 67 km. double tracked), long welded trackage reached 25 per cent. The proportion of freight rolling stock awaiting overhaul or actually being repaired was cut down to 4.1 per cent of passenger rolling stock: 7.9 per cent, of steam locomotives 29.6 per cent, electric locos 11.9 per cent, electric motorcars 11.8 per cent, diesel locos 14 per cent. The N.S.B. auto-bus network had a length of 9,912 km., transported 14.3 million people and included 405 buses and lorries.

Instability of railway traffic trends

BY A CORRESPONDENT

TRANSPORT Statistics No. 8 issued by the British Transport Commission gives aggregate statistics for 32 weeks to August 13, and together with the advance statement of traffic receipts to September 10, shows how uncertain traffic trends on British Railways are at present. In 12 weeks to March, freight train receipts were £1,003,000, or 1.5 per cent, down from 1960. For 24 weeks to June 18, the decrease in receipts became £2,340,000, or 1.9 per cent. The four weeks to August 13, brought a rise in freight train revenue of £523,000, or 3.4 per cent, but the next four weeks to September 10 produced a loss of £1,828,000, or 8.5 per cent, so that over 36 weeks the railways were £4,173,000, or 2.3 per cent, behind the poor year 1960.

Tonnage and ton-mile figures are available for 32 weeks to August 13. These show that the railways originated 987,000 fewer tons this year, a decrease of 0.7 per cent. The largest drop in volume was in minerals, down 939,000 tons, or 2.6 per cent, and this traffic may not pass more freely until iron and steel industries work again to full capacity.

Meantime passenger traffic is not increasing in volume. In six months to June 30, the railways carried 487,561,000 passengers, a decrease of 6,902,000, or 1.4 per cent. The railways lost 660,000, or 6.3 per cent, of their first class passengers. Passenger takings during the first half year were up 5.2 per cent, because on an average a first class passenger paid 21d. more for a journey, while a second class ticket cost about 2d. more. Parcels revenue during 32 weeks was only 0.2 per cent higher than in 1960. In existing conditions the cost of conducting passenger train services must be high and the promised restoration of electric services in the Glasgow area at an early date cannot go far to improve results even if the whole of the 1,838,000 passengers lost by the Scottish Region in the first six months of the year are recovered. The tables showing the British Transport Commission's advance statement of traffic receipts for four weeks ended September 10 and the aggregate results to that date were published in our news pages last week.

LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

RAILWAYS INTO ROADS

September 21

SIR, It would appear Mr Mitchell has fallen into error in quoting "British" statistics as being applicable to the Great Central line; they are far from being so. If your correspondent considers the present volume of traffic can be dealt with over "other Railways" and on the roads he can only assume there is spare capacity on the former but have some knowledge, as a road haulier, about the latter. So why should a trunk rail route be converted to yet another road even if it were structurally possible—and surely it is not?

There are sufficient roads in this country already; the trouble is that there are too many uncontrolled vehicles, and too many casualties. If, when driving his lorry, Mr. Mitchell feels exasperated at his progress, should it not indicate to him there is one too many on the road?

Yours faithfully,

R. T. MUNNS

16, Boundary Road,
St. John's Wood, N.W.8

WESTERN REGION TIMETABLE

September 27

SIR, Referring to the letter from Mr. Shurrock published in your issue of September 8, which criticised the timing of local trains at Didcot in relation to the main-line services, the problem is not a new one and revolves around the question of whether a connection should be afforded with the Up or Down main-line service, as it is not always practicable to provide for both.

One of the main objects of the new timetable is to achieve a reliable and punctual service for the majority of our passengers. The implementation of this policy makes it essential to avoid advertising connecting facilities at junctions where the margin between local and express trains is so limited that delay to the latter will be the inevitable consequence.

This is amply illustrated in the case of the 7.45 a.m. Paddington to Weston-super-Mare and the 8.29 a.m. Oxford cited by Mr. Shurrock. The 8.29 a.m. Oxford starts from Leamington and at Oxford it combines with the 7.30 a.m. from Moreton-in-Marsh which arrives at 8.21 a.m. In the best of circumstances there is a margin of eight minutes at Oxford in which to allow passengers to detrain and to combine both trains. Mr. Shurrock suggests this margin should be reduced to five minutes to enable the 8.29 a.m. Oxford to leave at 8.26 a.m. and arrive at Didcot at 8.46 a.m. to connect with the 7.45 a.m. Paddington to Weston-super-Mare. Such an arrangement could only result in habitual delay at Oxford and Didcot with consequent annoyance and inconvenience to passengers. Tight margins, though they may look well on paper, are not conducive to punctuality.

The suggestion that the 8.29 a.m. Oxford (6.50 a.m. ex Leamington) to Paddington which runs non-stop from Didcot to Paddington, should call at Reading, is already receiving my attention but here again schedules of the 7.10 a.m. ex Trowbridge and 6.20 a.m. ex Hereford due Paddington at 9.56 a.m. and 10.01 a.m. will be affected, if we are to ensure punctuality.

This will be appreciated if one considers the sequence of trains from Reading to Paddington at this time of day. We shall undoubtedly be criticised if by meeting one request we worsen the schedules of other trains as the Oxford travellers in particular are constantly demanding faster services to London.

With regard to the 7.18 a.m. Oxford to Didcot, here again Mr. Shurrock advocates working to tight margins which are not acceptable if punctuality is the goal.

Our new service is very young, and having introduced it we are maintaining a close watch on the results. In point of fact we are examining the possibility of making certain adjustments, but your experienced readers will appreciate that every change made during the peak period has its impact on other trains, including connecting services, and alterations cannot be introduced at short notice.

I would like to thank Mr. Shurrock for his helpful criticism and to assure all our correspondents that if it is found practicable to make improvements we intend to do so.

Yours faithfully,

G. A. V. PHILLIPS
Divisional Traffic Manager

London Division, Paddington,
British Railways, Western Region

ROUGH RIDING ON KENT COAST LINE

September 26

SIR, I travelled on September 22 by the 5.16 p.m. Broadstairs to Victoria. It was a most uncomfortable journey. When running at speed the compartment rocked from side to side and one was jerked up and down in the seat in a very unpleasant manner. It was impossible to read a book or newspaper properly and I can imagine how difficult passengers would find it to drink tea or other beverages.

Is it not possible for British Railways engineers who build the rolling stock to overcome such discomfort caused to railway passengers and ensure smoother running? One does not experience such rough riding with steam or diesel traction.

One can understand the travelling public resorting to coach travel to reach their destination in greater comfort.

Yours faithfully,

H. F. DALTON

"Pinn-Meadow,"
Eastcote Road, Ruislip

INTERNATIONAL UNION OF RAILWAYS

October 2

SIR, Your issue of September 22, with its excellent and wide-ranging account of the International Union of Railways (U.I.C.), was read with much interest when attending a Committee meeting of that Union held at Würzburg last week.

Perhaps you may like to record, as a postscript, the tribute that might well be paid to certain British Railway officers, during the immediate post-war period, who, when faced with the problems of resuscitating the U.I.C., met, with rapid and effective action, the appeal made, late in 1945, by Monsieur Le Besnerais—then the Union's President—that the British Railways play a leading part. It was the work of Sir Eustace Missenden, Sir John Elliot, and also of Sir Charles Newton at that time, that laid the foundations making possible the recent Board meeting in London an unique event.

It is appropriate in your columns to add that the vital negotiations took place at the Transportation Club, in which the late Mr. J. A. Kay of *The Railway Gazette* took so much interest.

Yours faithfully,

C. E. R. SHERRINGTON

"Byways," 20, Queens Road,
Belmont

The Scrap Heap

Uncrowned

The illustration shows the nameplate on an Ulster Transport Authority 2-6-0 engine, number 98, formerly owned by the Northern Counties Committee of the former London Midland & Scottish Railway, King Edward VIII.

Look again

In a bay on platform 13 at Clapham Junction the other day, were four brooms, one broomhead, one shovel, four buckets, one squeegee, one incinerator, two train indicator boards, seven assorted pieces of wood and metal, one watering can, two long duckboards, one framed train departure schedule, one long-handled hook, one sheet of cardboard on which were chalked three arrows and the word "Look," two porter's trolleys, a length of iron piping—and a board bearing the instruction TO BE KEPT CLEAR.

Travelling time

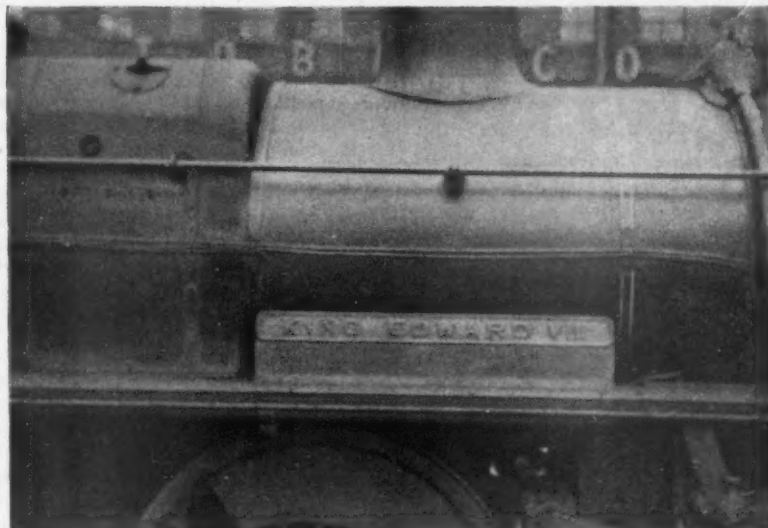
The window of the British Railways office in the Strand holds a large display sign on which appears the phrase "Any time is travel time." Beside the window a notice states that hours of business are 9 a.m.-5 p.m. Monday-Friday, and 9 a.m.-12 noon Saturday.

Private enterprise

Passengers on the first diesel Pullman from St. Pancras to Nottingham on October 2, went hungry because the 11 Pullman attendants refused to work the train, and the 6-coach train left without them. The kitchen-car staff remained at their posts but no meals could be served. Apparently, it was stated later, the men objected to the extension of a service run by a private company for the benefit of British Railways. Talks are to be held between the men's Union and the British Transport Commission to settle the dispute.

Buffet car?

In the early days of railways, as may be seen by reference to contemporary prints, an ingenious person once suggested that the shock of collision between two trains might be minimised by the expedient of hanging huge feather bolsters or pillows at the end of the rear vehicle of each train and in front of the locomotive. History, unfortunately, does not record whether any railway company ever tried the experiment. Neither have any of our railways as yet experimented with the device outlined by Mr. C. R. Enoch, F.R.G.S., in his magniloquently-entitled address "The



Nameplate on U.T.A. engine King Edward VIII

Necessity for Safer, Quicker and Cheaper Railways, with some Proposals Therefor," read before the Society of Engineers on Monday last. The author's suggestion, is illustrated by a diagram of a vehicle whose interior is mainly occupied by what appears to be a collection of magnified sofa springs. The ingenious projector, as Swift would have called him, naively remarks that he has "submitted this design to six of the principal railway companies of Great Britain, but none of them has shown any disposition to adopt it." We think we could tell him why.—From the *Railway Gazette*, October 6, 1911.

Mum's the word

An elderly lady recently dashed on to the platform at Waterloo Station. "Quick!" she said to a porter. "Is this the train?"

"Yes madam," replied the porter.—From the *Evening Standard*.

The Doric Arch

In "The Scrap Heap" of September 29, we stated that "It is hoped that the London County Council can be prevailed on to agree to have the Doric Arch moved to a site nearer Euston Road." We have been informed by the London County Council that this statement was not correct. The facts are as follow: when the redevelopment plan was submitted to the L.C.C., it showed that British Railways wanted to dispose of the arch. Feeling that there might be an outcry if the arch were removed com-

pletely, the L.C.C. pointed out that it might be possible to move it elsewhere under the development planned. If an approach were made to the L.C.C., it is possible that it might be prevailed on to make a subscription toward the cost of moving the arch to another site. Meanwhile, proposals have been made by interested parties to move the arch on skates and rollers. The skates would come from an engineer who is also an antiquarian, and the rollers from a Canadian company specialising in moving buildings.

Vanishing art

Fifty paintings, valued at more than £3,000, which were to have been on show from October 5 at the Cooper Art Gallery, Barnsley, Yorkshire, have failed to arrive. British Railways say the paintings which formed part of the Indian section of the Victoria & Albert Museum, London, left Buxton, Derbyshire, on September 29. A check by British Transport Commission police of sidings in Derby has not revealed any trace of the paintings.

London's first railway escalator

Only the more adventurous travellers risked the perils of the first "moving stairway" in London railway service, when it was opened 50 years ago, on Wednesday, October 4, 1911. It connected the Piccadilly & District Railway platforms at Ears Court. To encourage public confidence, the Underground employed "Bumper" Harris, a man with a wooden leg, to ride up and down.

OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

INDIA

Farakka ferry E. and N.E.F. Railways

The Calcutta-Siliguri (Northern Bengal) 5-ft. 6-in. gauge link at present under construction will in future cross a branch of the Ganges on a barrage between Farakka and Khejuria, but until the barrage is constructed it will cross the river with a wagon-ferry. This is already in service, the vessels used being those released from the Mokameh ferry as a result of the completion of the great bridge over the main Ganges at that point. The ferry-barges had, however, to be converted to carry 5 ft. 6 in. instead of metre-gauge wagons. Once the broad-gauge line is completed between Malda and Siliguri there is likely to be heavy traffic over this route, but for the moment two trains each way daily suffice.

Jai Bhareli & Brahmaputra bridges

On May 21 the Railway Minister officially opened the 1,890-ft. long Jai Bhareli bridge, 21 miles from Tezpur, on the Rangapara North-North Lakhimpur railway construction in Assam. This construction is 107 miles in length, but as the bridge is situated at the near end of it, the bridge construction formed stage 1

of the whole. Work was begun in February, 1960, so that completion of this large structure in 15 months constitutes something of a record by the Northeast Frontier Railway. The Minister reported, incidentally, that all the 11 main and the two shore piers of the Brahmaputra Bridge had now been completed ready to receive the girders, materials for which were arriving at the bridge.

Early dieselisation of the N.E.F.R.

Orders have been placed for 60 metre-gauge diesel locomotives to work goods traffic over the Katihar-Amingaon section, and are expected to be delivered in February, 1962. The capacity of this section—which includes the Assam Rail Link—it is estimated, will be increased by 30 per cent when these engines are in service. The Lumding-Badarpur—the old Assam-Bengal “hill section”—is also to be dieselised during the Third Plan, increasing its capacity by about 230 per cent.

Proposed line to West Coast

The Deputy Minister of Railways, India, said recently in the Lower House that the construction of a rail link between Hassan—on the Bangalore-Poona metre-gauge main line—and

Mangalore, the terminus of the 5-ft. 6-in. gauge line from Madras on the West Coast, was under consideration. It would be phased to suit progress made in the development of the port of Mangalore during the current five-year period. This line would be a valuable outlet for exports from the Mysore State plateau, but would probably be through difficult country in its descent of the Western Ghats. The termini of the proposed line are about 85 miles apart as the crow flies, but are likely to be well over 100 by rail. For economy, the line would probably be of metre gauge.

QUEENSLAND

800 bogies for Mt. Isa line

Orders for the construction of 800 bogies for 400 railway ore wagons, to be used on the rehabilitated Townsville-Mt. Isa line, have been placed with the Queensland firms of Walkers Ltd., Maryborough, and Queensland Electric Steel Limited, of Moorooka, Brisbane, by the Queensland Railways Department. The bogies will cost nearly £600,000.

NEW SOUTH WALES

Conversions of gauge and motive power

In connection with the Melbourne-Albury conversion to standard gauge, Mr. Heard reported that eight out of the 34 coaches ordered for the through express services had been completed. The running time between Sydney and Melbourne by night express would be 13 hr. He mentioned that prior to conversion of motive power to diesel the N.S.W.G.R. had 1,213 steam locomotives whereas it now had only 801 and 150 diesel-electrics.

Forty 1,800-h.p. diesels from Goodwins

The New South Wales Government Railways administration has placed an order for 40 1,800-h.p. diesel-electric locomotives with A. E. Goodwin Limited. This is understood to be the largest order for diesels ever placed with an Australian manufacturer. These engines will have Alco DL 541 model engines and are of the Co-Co type mounted on Trimount bogies. The electrical equipment will be United Kingdom A.E.I. type including the 165 traction motors.

COMPUTER FOR CANADIAN PACIFIC RAILWAY



The IBM 7080 transistorised computer undergoing final testing before delivery

Locomotive and rolling stock matters

Addressing a meeting of footplatemen, Mr. Heard, Chief Mechanical Engineer, N.S.W.G.R., stated that orders were being placed for eight two-car diesel railcar sets for service in the Newcastle District and on some cross-country lines. Tenders were also being called for new electric trailer cars to replace the old T-type still in service. The delivery of 15 branch-line diesel locomotives was beginning shortly; the first was delivered in August and the remainder at the rate of three a month. An additional 40 main-line diesels would, he said, be placed in service during 1962.

NEW ZEALAND**Educational tours by "Limited Express"**

There is not the same demand for travel on the Auckland-Wellington expresses during winter as in the summer months. Accordingly between June and August the Railways Department offered children in the two cities the opportunity to use two sleeping-carriages on the 'Limited Express' at cheap fares. So popular has the scheme become that it has been extended to October.

FINLAND**Loading gauge of the Finnish Railways**

The loading gauge in use on the Finnish railways is one of the most liberal in Europe. Actually, there are two of them, and the larger maxima valid on almost all lines, are: height, 16 ft. 9 in. above rail level, and width, 10 ft. 4½ in.

1,000 Motive-power units in Finland

On July 1, 1961, the total number of locomotives, railcars and railbuses reached 1,000 units for the first time. The distribution of the different types of unit is as follows: 658 steam locomotives, 133 diesel locomotives, 23 diesel railcars, and 186 railbuses.

Traffic increase on the State Railways

The volume of traffic moved in 1960 on the Finnish State Railways increased by about 9 per cent as compared with that of the previous year.

38 relay installations are being built

The Finnish railways now have 19 relay installations in use. In addition, 38 relay installations are being built in different places within the railway network.

SWEDEN**Another conversion to standard gauge**

In the district around Gothenberg the former narrow-gauge Gärdsjö-Marie stad section of the Swedish State Railways has been converted to standard gauge, the line having now been reopened after a three-months closure to facilitate the work.

DENMARK**Fall of earnings in second quarter**

During the second quarter of 1961 the earnings of the Danish State Railways were lower by 15 million kroner compared with the same period last year. This was due to higher wages and to three

hours a week shorter working time from April 1. In the same period receipts increased by only 5 million kroner.

WESTERN GERMANY**Mannheim yards**

The group of marshalling yards around Mannheim, through which pass more than 7,000 wagons a day, and which comprise 122 miles of track, 800 points, and 37 signalboxes and locking frames, is to be modified and enlarged to cope with 11,000 wagons a day. Estimated cost of the work is DM.37.5 million and the work is to be spread over six years. A yearly saving of DM.3.5 million is estimated when the work is complete. One of the first modifications is to be the diversion of the Mannheim-Heidelberg main line 80 yd. north of its present alignment; one of the final improvements is to be the replacement of 22 of the existing signalboxes by two modern electric installations.

AUSTRIA**World's largest wagon**

The Austrian company "Continental" specialising in heavy transports have ordered the largest wagon ever built for a railway. The wagon will carry 300 tons, have 20 axles and be about 50 m. long. The technicians of the Austrian State Railways have worked on the wagon-construction for five years, and several new ideas will be in the construction. The wagon will have interchangeable axles enabling it to run over Russian or Spanish broad-gauges.

PUBLICATIONS RECEIVED

Der Semmering und seine Bahn. By Dr. Alfred Niel. Vienna VI, Zeitschriftenverlag Ployer & Co., Agidigasse 5. 11½ in. × 8½ in. 60 pp. illustrated. Price: Oest. Sch. 90. Earliest, and still one of the most notable, of Alpine railways, the Semmering at last has a book of its own. From von Ghega's beginnings in the 1840s it has always been in the news, first by reason of its pioneer construction; then by the celebrated locomotive trials of 1851, which, though numbering no successful design among the competitors, really resulted in the evolution of the Engerth type; then as a field for some of Golsdorf's most notable locomotives; and finally as the scene of three separate diesel locomotive trials of great merit during the last five years. Today, electrified, the Semmering has lost the pre-1959 glamour of two 2-10-0 locomotives at the head and one 2-10-2T at the tail of passenger and freight trains struggling

up the 12½ miles of 1 in 40; but Dr. Niel's book recaptures in words and illustrations the intensely individual character which for 110 years has attached to this railway, its constructors and its operators.

Der Eisenbahn der Erde. Vol. 1. Gross Britannien. By Dr. Fritz Stoeckl. Vienna VI, Zeitschriftenverlag Ployer & Co., Agidigasse 5. 11½ in. × 8½ in. 108 pp. illustrated; loose map at back. Price: Oest. Sch. 90. Many railway enthusiasts tend to be dubious of a work on their own railway system emanating from another country. Nevertheless, such a volume has the possibility of being balanced because no bias exists. So it is with this book. Its text, its illustrations, and proportions are excellent throughout the ground it covers; but its title should really be "Trains, Motive Power and Passenger Rolling Stock of Great Britain," for 90 per cent of the

book is occupied with those subjects and 4 per cent with miniature railways; only in the other 6 per cent is something written about the railway system as a whole.

Holidays Overseas. This publication by Thos. Cook & Son Ltd., and Dean & Dawson Limited, is an illustrated brochure giving general and detailed information about travel itineraries and facilities offered by the two companies outside Europe and North Africa.

Gear-Type Pumps — Construction and capacity of a considerable range of gear-type pumps up to 1,000 g.p.h., and of a few larger types up to 3,000 g.p.h., are given in the new catalogue of the Brooke Tool Manufacturing Co. Ltd., Warwick Road, Birmingham, 11. Production includes reversible as well as uni-directional flow models.



Interior of station concourse, showing concrete planked roof and ticket office on left

RECONSTRUCTION OF BARKING STATION

British Railways, Eastern Region

THE station buildings at Barking have been completely rebuilt to meet the needs of the very heavy passenger traffic handled. Work on the concourse, which spans nine tracks at road level, had to be carefully programmed in order that the day-to-day working of the station should be affected as little as possible. This necessitated the provision of a temporary ticket office, parcels office and booking hall.

Use of concrete

The concourse deck, supported by *in situ* T columns built on piled foundations sunk into the platforms, is of pre-cast pre-stressed reinforced-concrete beams. This type of construction made it possible to reduce the depth of the deck and so allow additional headroom for electrification, while maintaining the original

floor level. The deck beams were erected over the railway during weekends when full possession of the tracks could be obtained.

The high-level roof above the concourse is constructed of precast concrete members, the main feature being cranked cantilever beams capped at the ends by concrete valance units. These have a span of 48 ft. and project 18 ft. beyond the front columns of the concourse, thus forming a canopy and providing cover and lighting to a new road layby on the site of the old station building. The roof is of precast concrete planks,

Extensive use of pre-cast concrete and ceramic tiles for wall facings

covered by three layers of roofing felt and, with the main beams, is supported by concrete columns 22 ft. high. The wall areas between the columns are fully glazed.

At the rear of the concourse is a low-level roof over the ticket office and passage to the platform stairways. A 30 cwt. goods lift has been installed between the concourse and No. 1 platform. Parcels and inquiry offices are provided and confectionery, tobacconist's and news-agent's kiosks open both on to the concourse and the street. The subsidiary

Continued on page 396



3-car multiple-unit diesel set for trans-Pennine feeder routes of the North Eastern Region, British Railways

THREE-CAR MULTIPLE-UNIT diesel sets for British Railways

THREE-CAR multiple-unit diesel sets, with 180-h.p. Rolls-Royce engines, designed and built by the Birmingham Railway Carriage & Wagon Co. Ltd. in conjunction with the Drewry Car Co. Ltd. to operate on the "feeder" routes of the trans-Pennine expresses are now entering service in the North Eastern Region of British Railways. These sets have a tare of 87½ tons giving a power/weight ratio of 8.3 h.p. per ton which is stated to be appreciably higher than any other all-steel sets now in service on British Railways using naturally aspirated engines.

Performance tests include a standing start against a ruling gradient of 1 in 261 and a typical three-car set in tare condition achieved a speed of 30 m.p.h. in 45 sec.; 50 m.p.h. in 2 min. 4 sec.; and 70 m.p.h. in 4 min. 6 sec. From a standing start on a 1 in 45 gradient a speed of 25 m.p.h. in third gear has been reached in 42 sec. The cars are arranged for multiple-unit operation with other "blue square" stock.

Accommodation

Accommodation is provided for 24 first-class and 159 second-class passengers and 1½ ton of luggage, the two first-class compartments, one for smoking and the other for non-smoking passengers, being immediately behind the driver's cab at each end of the set, and the whole of the second-class non-smoking accommodation in two contiguous saloons of the centre trailer-car.

Toilet compartments are provided in one motor-car and in the trailer-car. The stock is gangwayed and a side corridor in the guard and luggage compartment,

formed with a grille partition, permits free movement of passengers through the three-car set.

The motor-cars, being also driving cars, have B.R.-type A.W.S. equipment and the "Loudaphone" system for intercommunication between driver and guard.

Power equipment and controls

The Rolls-Royce C6-NFLH Series 130D engines with the Wilson SE.4 gearboxes and fan-cooled radiators are arranged symmetrically in the underframe of the motor-cars, as is all major duplicated underframe-mounted equipment whether associated with the power unit or not.

This arrangement permits the maximum degree of standardisation of suspension equipment.

The drive is transmitted to a single axle on each bogie through an A.E.C.-type F239C final-drive gearbox with a ratio of 2.97:1 giving overall ratios of change speed and final-drive gears of 12.6:1, 7.15:1, 4.74:1 and 2.97:1.

A through-flow atmospheric cooling system is used, the header tanks being floor-mounted behind the bulkhead-fixing seats at the end of the centre saloon to avoid inconvenience to passengers by loss of leg room.

The standard B.U.T. control system is used with relay operation of throttle, change-speed and reversing gears, and oil

and air pressure indication; C.A.V. type relays are used for the first time in B.R. diesel multiple-units for this purpose. The main-underframe wiring is carried in sheet-metal trunking and conduit branches have been reduced to a minimum to enable the cable loom to be made up on the shop floor; terminal boxes are provided at both ends of each vehicle and in the centre of the motor-cars for connections to the power and control equipment.

The power in the motor-cars for control, lighting, and battery charging is supplied by dual engine-driven C.A.V.-type AC8 alternators with a combined maximum output of 130 amp. paralleled through a single C.A.V.-type RUG.11 rectifier and regulator unit.

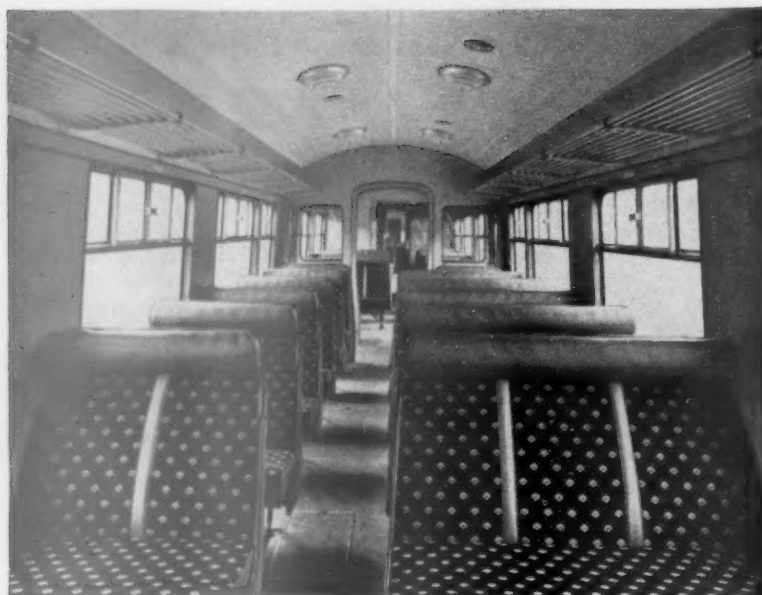
The wide speed range of the alternators allow these to be driven to obtain a good output at low engine speeds.

The trailer-cars are fitted with a single axle-driven Stones Tonum A.R.30LC generator with a maximum output of 150 amp. Both motor and trailer-cars have a battery of 12 Exide KFD.33 lead-acid cells with a capacity of 430 ampere hours at the five-hour rate.

Construction and finish

These vehicles are similar in construction to the 302 cars previously built by Birmingham Railway Carriage & Wagon Co. Ltd., to their own design for British

Birmingham-built stock with Rolls-Royce engines for trans-Pennine feeder services



Interior of second-class coach

Railways, the body and underframe structure being built as an integral unit. Body framing members, panels, and roof sheets are all of 16-gauge mild steel fabricated by electric arc welding into jig-built units riveted together and to the underframe. The underframe is a welded structure of 8 in. deep rolled-steel channels and plate fabrications forming the bolsters and headstocks.

Body design

The bodies are designed to accommodate the latest four-digit route indicators and pan-frame windows. The pan-type frames, which are used to reduce the risk of body panel corrosion, have been designed by B.R.C. & W. Co. to accommodate the size of glass used for standard coaches. Parcel rack vibration is eliminated by the use of rubber grommets between the tubes and mounting brackets.

The driving compartment interiors are

generally as in the previous vehicles and the greater part of the interior finish in this compartment is composed of glass-polyester mouldings completely enclosing the route- and destination-indicator gears, whilst permitting operation of these without opening the covers.

Each car is fitted with a single Dragonair DLVA.80 combustion air heater having an output of 80,000 B.T.U's per hour. The whole of the underframe hot-air ducting is moulded in glass-fibre laminate lagged with mineral wool and protected with plasticised glass-cloth covers.

Bogies

The Derby design of driving bogie is used with hydraulic dampers controlling lateral movement in place of the leaf springs previously used. The trailer bogies have been modified to include vertically-hung swing rods carrying on knife-edges the spring plank which is

tied to the bolster by an "anti-shimmy" bar, the side control is by rubber spring and hydraulic dampers. The secondary springing includes a rubber spring which takes increasing effect with the addition of pay load, thus reducing the equivalent rate, and this portion of the suspension is also damped hydraulically.

The vehicle stability and riding characteristics with this suspension are stated to be very good, both at high speeds on curves and at maximum speed on straight track.

The list of sub-contractors include the following:—

Engines and radiators	Rolls-Royce Limited.
Gearboxes	Self-Changing Gears Limited
Final drive and control equipment	British United Traction Limited
Fire protection equipment	Graviner Manufacturing Co. Ltd.
Flexible connections	Lockheed Precision Products Limited
Fuel-tank gauges	Bayham Limited
Air-system pipe fittings	The British Ermeto Corporation Limited
Generators and light fittings	Simpliflex Limited
Battery	J. Stone & Co. (Deptford) Ltd.
Alternator and rectifiers	Chloride Batteries Limited
Wheels and axles	C.A.V. Limited
Axleboxes	Owen & Dyson Limited
	British Timken Division of the Timken Roller Bearing Co. Ltd.
Bolster coil springs	Wilford & Co. Ltd.
Side-bearing laminated springs	Thomas Turton & Sons Ltd.
Hydraulic dampers	Steel Peech & Tozer Limited
Door windows and sliding-door gear	Woodhead - Monroe Limited
Self-contained buffers	Beckett Laycock & Watkinson Limited
Blinds	Geo. Turton Platt & Co. Ltd.
Extractor ventilators	Nicholls, Frayse Limited
Rubber springs	Greenwood's & Airvac Ventilating Co. Ltd.
	Aeon Products (London) Ltd.
	J. H. Fenner & Co. Ltd.
	Geo. Spencer, Moulton & Co. Ltd.
Air combustion heaters and filters	Andre Rubber Co. Ltd.
Screen demisters and washers	Dragonair Limited, Ozonair Engineering Co. Ltd.
Warning horns	S. Smith & Sons (England) Ltd.
Destination and route-indicator gear	C. V. Desiderio Limited
Sheet plastic	E. W. Matthews & Company
Moquette	Formica Limited
	John Holdsworth & Co. Ltd., J. A. Wood Limited
Carpets	T. F. Firth & Sons Ltd.
P.v.c.-coated fabrics	Bernard Wardle Limited
	Imperial Chemical Industries Limited
Asbestos insulation	J. W. Roberts Limited
A.I.V. brake equipment	Gresham & Craven Limited
Non-metallic liners	British Belting & Asbestos Co. Ltd.
Seat frames	Cox & Co. Ltd.
	Hallam, Sleigh & Cheston Limited
Latex-foam seat fillings	Dunlopillo Limited
Linoleum	Bintex Limited
Glass	Korkoid Decorative Floors
	Pilkington Bros. Ltd.

AERIAL SURVEY OF RAILWAY SYSTEM IN VICTORIA

The Minister of Transport has announced a fresh aerial survey of the railway system primarily in the Melbourne area. Since the last one carried out in 1953 many new stations, overbridges, level crossings and track alterations have been brought into use. The photographs will be taken at a height of 1,320 ft. giving a scale of 160 ft. to an inch. To facilitate identification of selected mileposts from the air sleepers near them are being painted white. Tenders have been invited from aviation contractors for

this work, but it will be under the same supervision as the last one by Mr. W. McDonald of the Victorian Railways staff.

V.G.R. TRAMWAY CLOSED

The Victorian Government Railways' tramway from St. Kilda to Brighton was closed despite strong opposition from the local population. In reply to meetings and petitions the Minister of Transport explained that the Government was losing £2,000 a year on the working of this tramway and the tracks required renewal. A privately-owned bus service

has been substituted and a subsidy is understood to be paid to the bus-owner to keep down fares to those of the former tramway. Also it appears that the Government has granted to the Brighton town council a sum of £200,000 as compensation.

PROPOSED LINE IN TANGANYIKA

It is understood that the East African Railways & Harbours administration is to request Government sanction and an allotment of funds for the construction of an extension of the Mikumi line southwards into the Kilombero Valley.

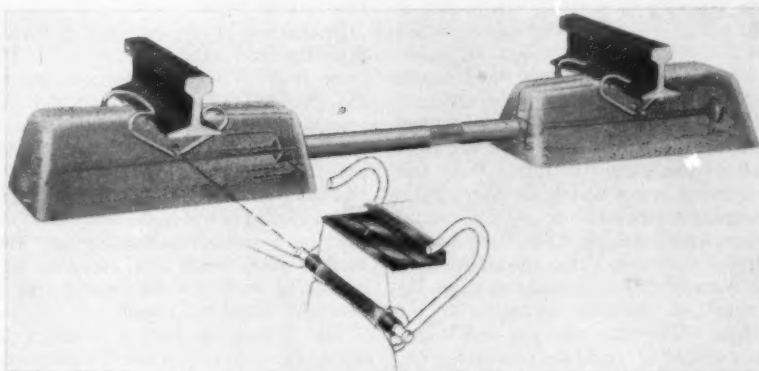
"101" CONCRETE SLEEPER on the Swedish Railways

TO MEET the principal requirements suggested by international experience in the use of concrete sleepers, the Swedish State Railways administration, after testing various other types, has designed and adopted the "101" sleeper. It has been laid on the more important main lines in Sweden since 1951, and over 500,000 of the type have been used. Conditions in Sweden are particularly severe in respect of climate and constant instability in the subsoil in places at certain times of the year. By the end of 1960 the South African Railways & Harbours administration also had procured 475,000 of these "101" sleepers, and a factory for their production has been established in South Africa.

Conditions of main-line service

On the principal line in Sweden between Stockholm and Malmö these sleepers are in service under rails welded into lengths of up to nearly seven miles and under heavy traffic moving at speeds up to 80 m.p.h. Even in Sweden where timber is so easily and cheaply obtainable and where the "101" sleeper costs 50 per cent more than a wooden sleeper, the "101" is considered the more suitable.

It consists of two pre-stressed concrete blocks connected by a steel tube filled with concrete and reinforced by a pre-stressed high-grade steel rod drawn through the tube and anchored at the outer ends of the sleeper blocks with nuts and washers. The pre-stress force acting throughout the



View of sleeper showing pre-stressing reinforcing bar and stirrup clamp rail fastening

whole sleeper is 13.5 metric tons. The steel tube has a diameter of $2\frac{1}{2}$ in., and the thickness of the metal is $\frac{1}{8}$ in.; the yield strength is 53 kg. per sq. mm. It is galvanised and is subject to permanent pressure which also tends to increase resistance to corrosion. The ends of the tube have milled slots to ensure torsional rigidity, and to effect union between the tube-ends and the concrete $\frac{1}{4}$ -in. bar reinforcement is attached and placed in this part of each block.

This pre-stressed central tube gives the

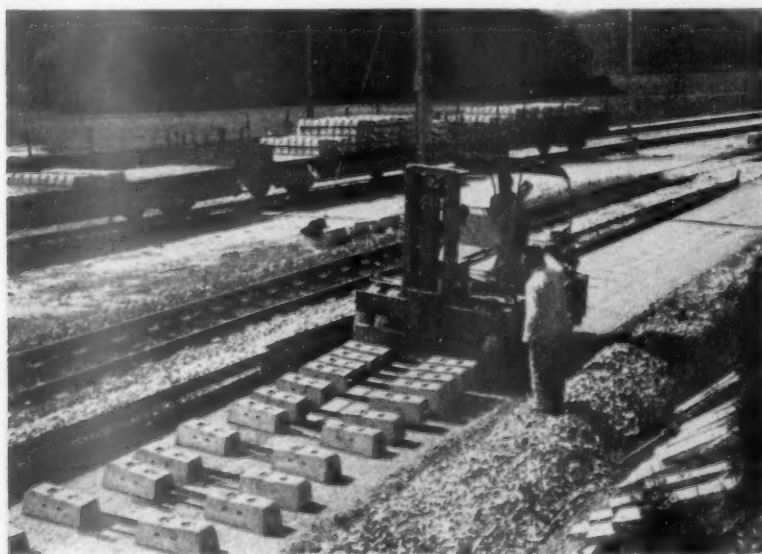
sleeper considerable elastic properties, allowing the blocks to adjust themselves to irregularities in the ballast bed without the sleeper becoming deformed; in fact, it acts as a strong spring.

Clamp rail fastening of value

What is of particular value when this type of sleeper is used with long-welded rails is its "fist" type clamp rail fastening. This consists of a stirrup bent so as to secure the rail to the sleeper at three points with a holding-down force of a little over a ton. The $\frac{1}{8}$ -in. stirrup is designed so that its two ends turn downwards and grip the inner toe of the rail, one on each side of the sleeper block. Its central portion in hoop-form also bends down to hold the outer toe. Between the hoop and each of the end hooks the stirrup is bent downwards so that it can be forced under pressure to pass under the projecting ends of a $\frac{3}{4}$ -in. spring-steel pin passing through the block. The ends of the pin are either crooked or recessed so that the stirrup does not slip off its end and the pin itself cannot move.

The pin passes transversely through the block immediately below the rail and parallel to it in a hole with a conical tube inserted at each end to equalise the pressure from the pin. The pin is surrounded by plastic phenol to insulate it from the tubes.

The rail is cushioned in a recess in the block on a fluted rubber pad with an up-turned edge fitting round the toe of the rail. This acts as a shock-absorber



Distributing sleepers on asphalted ballast

to damp the vertical and lateral vibrations transmitted from the rail to the sleeper; it also provides insulation.

The construction of the "101" sleeper is described below; the illustrations show this in process at the factory in South Africa with coloured labour.

Manufacture of the sleeper

The sleeper is cast in a reversed position in a steel mould, and the rod, tube and reinforcement are fixed in it. The mould is placed on a vibrator table and filled and vibrated simultaneously. The concrete is carefully proportioned and mixed in a high-speed mixer. When the mould is full and levelled off, a steel cover is pressed down on the concrete pneumatically. The cover is equipped with electrically driven vibrators having a frequency of oscillation different from that of the table vibrators. With this conflicting upper and lower vibration a pumping movement is set up throughout the concrete, making it free from air and surplus moisture. This special form of double vibration is considered most important in ensuring strength in the sleeper. The tube with the reinforcing cage welded to it and the reinforcing rod inside it is also filled under vibration with special high-quality concrete before being placed in the mould.

Immediately after casting the sleeper can be removed on a pallet without risk because the concrete has already solidified as a result of the thorough vibration. The sleeper on the pallet is then loaded into a wagon and moved into a heat-insulated chamber where it is steam-hardened for 8 hr. After the hardening by which the concrete has attained its full strength the reinforcement is pre-stressed with oil jacks before the sleeper is stored for 3-4 weeks. Thereafter the

reinforcement is again stressed and its ends are filled with concrete.

The work in the South African factory is proceeding at a rate of 350 sleepers in each of its four production circles per 8 hr. or 1,400 in all.

This particularly flexible sleeper is specially adaptable to long-welded track, the more so because of its special double-elastic fastening. The method of laying this type of track has been perfected by the Swedish State Railways. It was described in a paper presented to the International Railway Congress Association in July, 1959.

Briefly it is as now outlined. Provided that the new track is to be at the same level as the old, the clearing of the old track so that the ballast is removed from between the sleepers is effected with the aid of a track-plough drawn by a locomotive. If the track is to be raised, a track-sled is used like a surf board instead of a plough. The track then rests on a smooth ballast surface. This method saves much time, and over half a mile of track can be cleared and, if necessary, lifted in an hour.

The plough or sled is followed by a gang of six men who slew the track into position before it settles down from lifting by the plough or sled. Meanwhile the new track has been assembled in a "panel factory" in a neighbouring yard. Under suitable conditions two 40-m. panels can be fabricated simultaneously, or 80-m. panels can be formed, four men working on each panel.

The process described

Two 40-m. rails are placed as a stillage or assembly line with jigs fitted alongside them into which the sleepers are placed at correct spacings. The sleepers are brought from the factory on wagons and

placed on a track adjacent to the stillage. They are unloaded by overhead electric crane four at a time suspended from a spacing bar or sling so that when lowered they come to rest precisely in the spacing jigs. Meanwhile the rubber pads, pins and stirrup clamps of the rail-fastenings are placed ready for use at the sleeper-ends.

The next operation consists of lifting the 40-m. rails from adjacent stacks with the aid of a special sling and the crane and placing them on vertically-adjustable bars just above the sleeper-seating. The longitudinal position of the rail is adjusted by a special movable arm. The rubber pads are then placed in position round the railfoot, and the adjustable bars are lowered so that the rail slips into the recessed seatings on the sleepers.

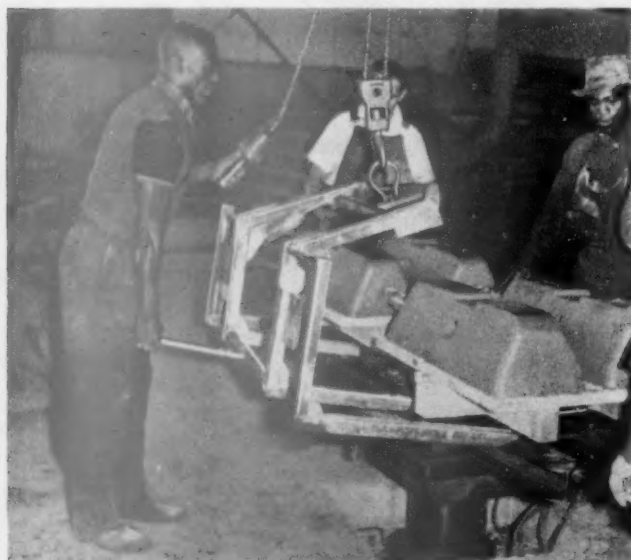
The rail fastenings can now be fitted with the aid of a special hydraulic machine to press the stirrup clip into place under the insulating pin in the block and over the toe of the rail. While this is being done, the rails are held firm and correctly to gauge.

Replacement of track panels

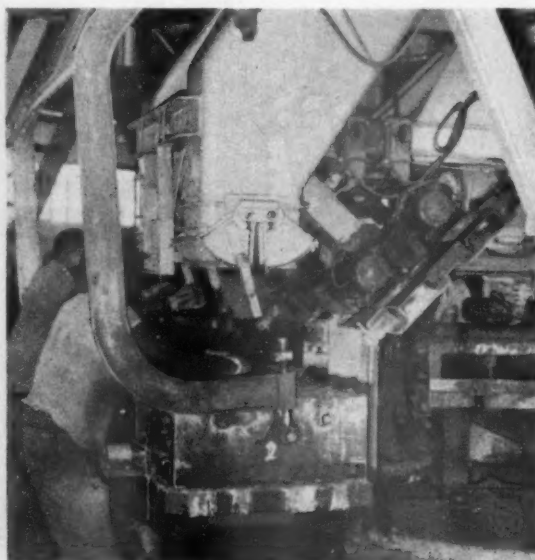
After the panels have been fabricated in this way they are loaded on to four trolleys under each panel, jacks lifting transverse bars placed under the rails between the sleepers and with them the panel; the trolleys are pushed in under it from one end. The trolleys are designed to ensure the panel's keeping its shape when passing over curves and points.

The complete panel, usually two 40-ft. units, is pushed to the laying site where replacement of the old track is carried out in one of two ways. If possession is available for a whole day, the old track is removed leaving a gap. In this "helper

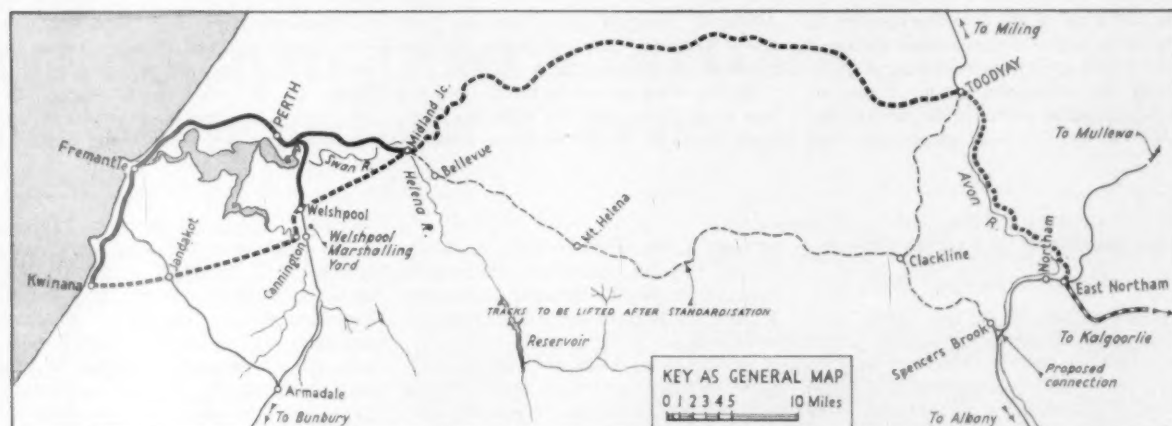
Continued on page 398



Hydraulic demoulding platform after removal of mould



Filling moulds with concrete on vibrating table



Map showing proposed conversion to standard gauge

PROPOSED TRANSFORMATION of W.A.G.R.

THE main features of the proposed replacement of the 3-ft. 6-in. gauge by a standard-gauge (4-ft. 8½-in.) trunk route from Kalgoorlie to Perth and Fremantle and to Kwinana direct were briefly outlined in our issue of March 31 last. The historical background to the proposal is the subject of an editorial on page 384 of this issue, wherein also are outlined the shares of the Commonwealth and of the State Governments and, most important, the situation in relation to the £A.44 million iron and steel development on which the gauge conversion mainly depends.

Iron and steel traffic

Though the coal necessary for the steel plant is expected to be shipped from New South Wales to Kwinana by sea, the estimated volume of 3,000,000 tons of ore a year will be carried by rail from Koolyanobbing to Kwinana, a distance of about 300 miles. The limestone required will also come by rail either from South Australia or from some other point east of Kalgoorlie, so that the lead on it will be at least 450 miles, 440 on the W.A.G.R. Some of the steel products will also go by rail from Kwinana to other States.

The iron mine at Koolyanobbing must establish a town for its labour, producing additional traffic for the railway, which will also benefit from industries that are certain to develop in and around Kwinana, Fremantle and Perth.

Future pattern of gauges

The accompanying map shows the standard gauge main line from Kalgoorlie to Kwinana as planned, together with the 3-ft. 6-in. gauge sections of the

existing line and the branches that will be affected. The 3-ft. 6-in. gauge section between Kalgoorlie and Coolgardie will be retained in addition to the standard gauge, to connect the Leonora and Esperance 3-ft. 6-in. gauge branches. At Merredin, transhipment facilities will be provided to serve the two branches to Narrogin and the loop line via Wyalkatchem and Goomalling, all these remaining 3-ft. 6-in. gauge.

The new connections projected in the metropolitan area are more clearly seen in the inset to the map, which also shows the approximate alignment of the re-routed main line, of three-rail mixed gauge, between East Northam and Midland Junction.

An extensive mixed-gauge deviation

This long deviation northwards via Toodyay is necessitated by the difficult country traversed by the existing 3-ft. 6-in. gauge line between these points. Its 1 in 40 gradients and excessive curvature would be completely unsuitable for the movement of heavy iron-ore trains over a 4-ft. 8½-in. gauge line following the same alignment. Instead, the Swan River valley route via Toodyay, though appreciably longer, is able to be followed with a ruling gradient of 1 in 200.

To enable traffic over the Great Southern line to and from Albany, and that from the various other 3-ft. 6-in. gauge branches coming into Northam from the north to continue to flow into Perth, Fremantle and Kwinana without

break of gauge, all lines west of Northam will be of dual gauge including the Toodyay deviation. Actually, instead of joining the main line at Spencer's Brook (just west of Northam) as it now does, the Great Southern line will be diverted into East Northam, where there will be a marshalling yard.

The existing 3-ft. 6-in. gauge double line from Midland Junction to Perth and Fremantle will remain, and a new 4-ft. 8½-in. gauge track will be constructed alongside it. A marshalling yard is to be constructed at Welshpool about 6 miles south of Perth on the South Western main line to Banbury, which is double-track as far as Armadale. Alongside this line from Perth to Welshpool a 4-ft. 8½-in. gauge track will be added.

New route to Kwinana

From Midland Junction another entirely new line with 3-ft. 6-in. and 4-ft. 8½-in. tracks side by side will be constructed via Kewdale, Cannington, and Jandakot to Kwinana, avoiding the busy Perth-Fremantle area and giving direct access for the iron ore from the deposit at Koolyanobbing to the steel plant and port of Kwinana. A similar new dual-gauge branch will run from Kewdale into the marshalling yard at Welshpool. From Fremantle to Kwinana a third rail will be added making a mixed-gauge line. The Coolgardie-Kalgoorlie dual-gauge section will have separate tracks.

Other important new works will be

A £A 41,200,000 project including 100-mile construction on new alignments

the lowering of the line through Perth, the construction of a passenger station at East Perth, and the remodelling of yards along the converted route. Once the standard-gauge route is in service, the whole of the 3-ft. 6-in. gauge line from

Midland Junction via Clackline and Easy Northam, to Coolgardie will become redundant and be dismantled.

Survey work is now in hand upon the new route from East Northam via Midland Junction to Kwinana, a distance

of probably about 100 miles, and construction is expected to begin within the next 6 or 9 months. Initially work is likely to be concentrated upon the Kwinana-Koolyanobbing section, but the whole project may take 7 years in all.

Reconstruction of Barking Station

(Concluded from page 390)

framing to the offices and kiosks is of black anodised aluminium sections. The floor finish to the concourse is of terrazzo tiles, and to the offices and kiosks of wood block. Extensive use has been made of ceramic tiles for wall facings.

Facilities for transfer to L.T.E. buses are provided by stops positioned near the station entrance.

Waiting rooms are provided on all eight platforms and lavatory accommodation is also available on most of these. The Stationmaster's office is situated on No. 5/6 platform and the Station Inspector's office on platform 3/4.

A mess room is provided for Eastern Region staff on No. 1 platform together with first aid and storerooms.

Ticket office

Before the reconstruction scheme was put in hand at Barking, all ticket issuing, parcels work and public inquiries were dealt with in a combined office—an inadequate narrow wooden structure.

The new ticket office has seven booking windows and a season ticket lobby, with separate adjoining rooms for the Chief Clerk, ticket store, mess room, toilets and staff pay lobby. The whole of this accommodation is contained within a block which measures approximately 72 ft. by 33 ft. overall.

Clear glass screens are fitted to the ticket office and the separate parcels and inquiry offices. These are furnished throughout with standard steel traffic office equipment on a module of 2 ft., giving the advantage of wide adaptability, tidy appearance and easy maintenance.

The glass screen to the ticket office is fitted with Melaphone speaking windows

at each of the seven booking positions. These possess individual illuminated signs which may be changed as required to cater for different traffic flows throughout the day.

Of the seven booking windows provided, two are devoted exclusively to the issue of season tickets. These are situated adjacent to the season ticket lobby where provision is made for the public to complete application forms and to obtain any information they may need about season ticket travel.

Rapidprinter machines and Bollmann ticket cassettes are installed in the new office for the issue of all tickets

Subway

A new subway has been provided connecting all platforms at the London end of the station. This is constructed of reinforced concrete box section cast *in situ* and tanked with asphalt.

The construction of this was somewhat difficult as it was necessary to support the tracks on temporary way-beams which had been placed in position during a total possession of each pair of platform lines. These were later removed as opportunity offered.

The heating and hot water supply is effected from a central boiler room which is fully automatic in operation. On an enclosed control panel are grouped all starters and controls which include a time clock, a compensator which regulates temperature of heating flow water in relation to that obtaining outside, and a frost stat which will override the time clock in case of necessity. A smoke density indicator is also fitted.

The control system time clock starts the boiler and pumps at pre-set selected times, after which the boilers control themselves automatically according to the heat demand.

The concourse buildings are heated mainly by "Panelite" embedded hot-water tube floor heating occasionally supplemented by radiators. Platform buildings are heated by standard radiators; the whole system designed to vent itself automatically. The ticket collectors' booths on the concourse are provided with radiant floor heating.

Lighting

The lighting in the circulating area of the concourse is by cold cathode tubes in the form of an illuminated fascia on three sides of the perimeter, and also by a number of floodlight type fittings unobtrusively positioned, specially made to blend with the black concrete supporting structure.

Platforms are illuminated by the standard range of cold cathode fittings specially designed for the Eastern Region, each bearing the station name for the convenience of passengers.

Internally illuminated train indicators have been installed on each platform with summarised indicators displayed above the ticket collectors' entrances.

The architect was Mr. H. H. Powell, Architect, Eastern Region, and the whole of the work carried out under the general direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region.

The signalling work was directed by Mr. R. A. Green, Chief Signal & Telecommunications Engineer, Eastern Region.

The electrical installation was carried out under the general direction of Mr. T. C. B. Miller, Chief Mechanical & Electrical Engineer, Eastern Region.

The principal contractors for the work of reconstruction were as follow:—

Station	C. R. Price
Piling	Holmpress Piles Limited
Signalbox	W. & C. French Limited
Subway	W. & C. French Limited
Technical departments' accommodation	Herbert Richardson & Sons Ltd.



The old station front as seen from East Street



Reconstructed station showing concrete canopy and road lay-by

CENTRALISED TRAFFIC CONTROL on the Netherlands Railways

ON January 23, 1961, the first centralised traffic control installation in the Netherlands came into service between Nimwegen and Blerick on the Netherlands Railways. The area controlled parallels the Maas River and a portion of the western border of Germany. It traverses a productive agricultural region in which grain and stock raising are prominent, and gives access to the coal-mine district in the south.

Traffic is exceedingly heavy on this line, consisting of 38 passenger trains, 22 through freight trains, and 16 local freight trains daily. This line has a relatively short run of 36 miles and passenger trains operate primarily during daylight hours while freight trains move mostly at night.

High-speed code-control system

This is the first installation in the world to use Quiktrol, the high-speed code-control system recently developed by the General Railway Signal Company. Quiktrol consists of two interrelated systems; one for controls to effect changes in the position of wayside apparatus; the other for indications to report changes that occur in the wayside apparatus at the field locations. This system interrelation is such that control and indication transmission can occur simultaneously, but in such a way as to prevent interference between field stations when transmitting indications. Indication transmission from more than one field location may also occur simultaneously. The controls

consist of polar codes which are transmitted over a two-wire line circuit. The indications are created by keying carrier transmitters with an on-off code to transmit carrier frequency energy over the same pair of line wires. Each field location is assigned its own carrier frequency

to enable simultaneous indication transmission.

The application of centralised traffic control is an innovation in Europe, where local control of station traffic has up to now seemed mandatory. C.t.c. obviously eliminates many of the expenses of local control and, in addition, eliminates the confusion resulting from telephone communications between many towers. The Netherlands Railways decided to use c.t.c. for the following reasons: out-moded station equipment needed replacement; the installation of automatic signals between stations would ensure safety and facility of operation, and the use of c.t.c. would increase line capacity without the necessity of double tracking.

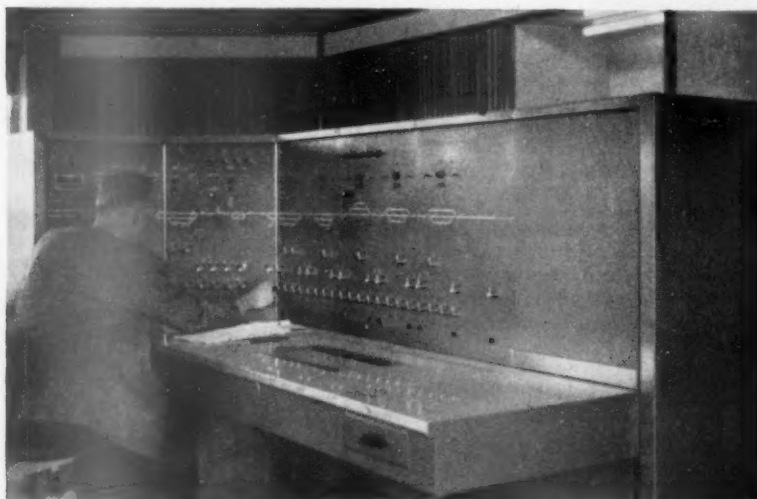
Future expansion

Four of the eight stations in the territory between Nimwegen and Blerick have passenger facilities. The control machine is designed for future expansion to include the control of four additional stations from Venlo to Roermond. The control machine, located at Nimwegen, has a light-green phenolic control panel with engraved white track lines. The controller and indication-lamp arrangement

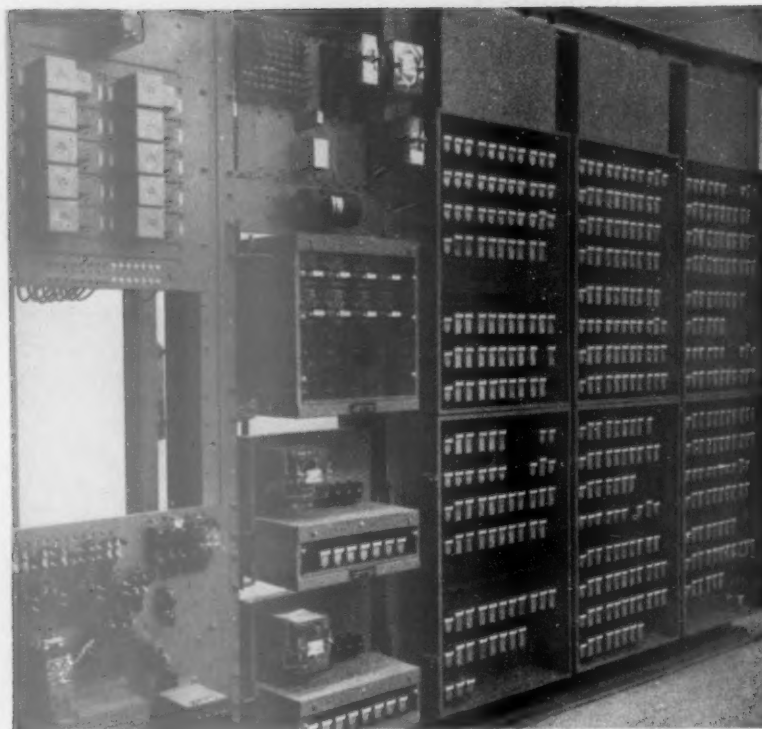
High-speed code-control system introduced between Nimwegen and Blerick



Tower at Nimwegen contains c.t.c. and system coding and power equipment



Operator handles 76 trains daily, blank panel is for future additions to Roermond



Quiktrol equipment includes transistor carrier units for multi-channel indication system

"101" concrete sleeper on Swedish Railways

(Concluded from page 394)

rails" of special profile are laid directly on the ballast but linked to the old track beyond the gap by means of an "aid track."

Positioning the new panel

The new panel is pushed out along the "aid-track" and "helper-rails" until it comes into position against the previously-laid panel and is then jacked up from the trolleys. The corresponding length of old track is next lifted similarly from the ballast, the aid-track is removed and the helper-rails and trolleys are pulled by the locomotive until they come under the raised length of old track. The latter is placed on the trolleys and the aid-track is moved forwards so that the old panel can be removed.

Finally, the new panel is lowered on to the ballast and welded to the previous panel into 360-m. lengths. After service under traffic for some time the 360-m. lengths are welded into convenient longer lengths.

Short term possession

If possession can be obtained for a short time only, more trolleys are used to enable the simultaneous movement into position of the new panels and the lifting of the old track and its loading on to

trolleys. Two pairs of aid-tracks are laid, one at the joint between the old track and the helper-rail. On arrival the new panels are linked up to the old, now loaded on trolleys. This allows the old panels to be pushed up on to the new track in its final position. It has to be raised to release the trolleys and helper-rail before it is again lowered. The old panels are then towed away. When this second method is used to the greatest advantage four 40-ft. panels are advisable.

On double-line sections an average length of 360 m. can be relaid in a 9-hr. day, and occasionally as many as 440 m. have been laid. The labour required consists of one foreman and 24 men.

RECONSTRUCTION OF EUSTON STATION

Preliminary work in connection with the reconstruction of Euston Station on the London Midland Region of British Railways is to commence soon and several diversions of road traffic occurred from October 1.

SUNDAY CLOSING OF GLASGOW QUEEN STREET

Because of engineering work being carried out on the main line to Cowairs, Glasgow Queen Street High Level Station, on the Scottish Region of British Railways, will be closed on Sundays to December 10, 1961.

follow generally accepted practices in the U.S. An automatic train recorder is built into the machine desk to record the movements of trains.

Automatic crossing protection

A total of 33 electric switch machines and 67 colour-light signals are controlled by the c.t.c. system. The installation also includes 54 automatic block signals between sidings and several protected highway crossings. Fifteen mechanical crossing gates have been replaced with automatic crossing protection. Two existing crossings have been eliminated, and three crossings not previously protected are now equipped with automatic flashing lights. There are now a total of 21 protected crossings in the territory, eight equipped with automatic half-arm gates, and 13 equipped with flashing lights. At stations, the trains stop just short of the pedestrian crossings. The short-arm gates lower automatically as the trains approach. When a train is in the station and the crossing is clear, the gates are raised by pushbutton operation.

The control machine, coding relays, gate mechanisms, and carrier equipment were manufactured by the General Railway Signal Company. Plug-in safety relays of GRS design, were manufactured in the Netherlands.

REVIVAL OF VETERAN DANISH RAILWAY

The Danish State Railways refused the Danish Railway Preservative Committee permission to use the no-longer-worked short section of railway between Soro junction and Soro station, on Zealand. The intention is now to move the material to the island of Lolland, where the private railway, Lollandsbanen, is interested in leasing to the society its Maribo-Bandholm goods line. The proposal is particularly interesting because this five-mile section is the oldest privately owned railway in Denmark. It is also noteworthy that the Lollandsbanen line from Nakskov to Kragenæs increased its passenger traffic last year by 50 per cent.

CENTRAL GOODS STATION FOR COPENHAGEN

Copenhagen has at present 10 goods stations, but there is to be a new central goods station to be completed in two years, where the whole goods traffic of the city will be centred with the others only as satellite stations under it. Many consider that this arrangement will probably prove unsatisfactory as all the lorry-traffic will have to travel from factories through the densest street traffic in Copenhagen in order to reach the central goods station. The project will cost about £600,000.

PERSONAL

Overseas

MR. L. A. W. HAWKINS, Assistant General Manager (Operations), Rhodesia Railways has been released on secondment to the Swaziland Railway Authority for a period of five years. Mr. Hawkins will be Chairman of the Swaziland Railway Board and Chief Executive Officer of the Authority. MR. A. H. CROXTON, Principal Executive Officer (Special Duties), has been appointed temporarily as Assistant General Manager (Operations), pending the integration of the Operations Division with one of the other Divisions.

MR. L. A. W. HAWKINS, F.C.A., C.A.(S.R.), ASSOC. INST.T., Assistant General Manager (Operations), Rhodesia Railways, who has been seconded to the Swaziland Railway Authority, joined the railway service as Assistant Chief Accountant in 1946. Previously, he had been a junior partner in a well-



Mr. L. A. W. Hawkins

known firm of chartered accountants at Southampton and Portsmouth. In the recent war (during which he was stationed for a period in Rhodesia) he served with the R.A.F. and attained the rank of Squadron Leader. Mr. Hawkins was appointed Chief Accounts & Finance Officer in 1950. In this capacity he visited England and America in 1953, in connection with loan negotiations with the International Bank, and the following year returned to this country for technical discussions regarding the Foreign Operations Administration Loan. He became Principal Executive Officer (Technical) in March, 1956, and Assistant General Manager (Operations) in January this year.

DR. S. S. L. VERMA, Divisional Medical Officer, Varanasi, North Eastern Railway of



Dr. S. S. L. Verma

India, who has been appointed Chief Medical Officer, Eastern Railway, was born on July 27, 1923. In 1945 he took his degree in Medicine & Surgery from the K.G. Medical College, Lucknow, topping the list of successful candidates. Dr. Verma served as an interne for a year in the K.G. Medical College. He worked there for another year as a lecturer in anatomy. He took his post-graduate degree in surgery from the Lucknow University in 1947 and in May the same year he joined the former Great Indian Peninsular Railway as an Assistant Surgeon attached to Byculla Central Hospital, Bombay. A year after, in August 1948, Dr. Verma became a Divisional Medical Officer on the former Assam Railway. In October 1953, he was appointed Divisional Medical Officer, North Eastern Railway, in charge of Central Hospital, Gorakhpur. In 1958-59 he won the Grant Medal & Grant Prize for Public Health Administration of the Indian Institute of Hygiene & Public Health, Calcutta. He became Divisional Medical Officer, Varanasi, in 1959.

MR. W. J. FURLONG, Foreign Freight Traffic Manager, Canadian Pacific Railway, has retired. He is succeeded by MR. J. N. MCPHERSON, General Foreign Freight Agent.

London Transport Executive

MR. J. F. B. CORNWELL, Senior Executive Assistant, Road Services Mechanical Engineering Section, Costs Office, London Transport Executive, has been appointed Principal Costs Assistant (General), with the rank of Principal Executive Assistant. MR. P. B. ONGLEY has been appointed Superintendent (Running), Operating Manager (Central Road Services) Department, with the grade of Principal Executive Assistant.

Industrial

DR. D. F. DENNY has been appointed Chief Engineer, Ronald Trist & Co. Ltd.

MR. R. P. E. TABB has been appointed Deputy Director of Engineering, English Electric Co. Ltd.

MR. J. BUNDGAARD has been appointed Sales Supervisor in Denmark, Wolf Electric Tools Limited.

MR. R. QUIGLEY, Area Manager, Scotland, Drummond-Asquith Limited, has been appointed Home Sales Manager.

MR. F. E. MORBS, Manager, Mail & Claims Department, Thomas Cook & Son Ltd., has retired. He is succeeded by MR. J. R. HUBBERSTEY.

MR. F. T. JONES has been appointed a Director of Microcell Limited, a subsidiary of B.T.R. Industries Limited. MR. J. A. GRACE has been appointed Commercial Director.

MR. G. CUNLIFFE, Managing Director, Norcross Limited, has been elected President of the British Standards Institution in succession to MR. R. E. HUFFAM.

MR. F. SHUTT, Secretary, Bristol Siddeley Engines Limited, has been appointed Financial Comptroller, Hawker Siddeley Industries Limited. He is succeeded by MR. D. H. HAYNES.

MR. R. H. WORMLEY, Yorkshire Area Manager, Associated British Machine Tool Makers Limited, has been appointed Home Sales Manager. MR. W. G. ORMEROD has been appointed Yorkshire Area Manager.

MR. L. W. BAILEY, L. W. Bailey & Partners Limited, representing the British Institute of Management, has been elected Chairman of the National Joint Committee on Materials Handling.

SIR ANTHONY BOWLBY, Director, Guest Keen & Nettlefolds Limited, and Joint Managing Director, Guest Keen & Nettlefolds (Midlands) Limited, has been elected Chairman of the British Standards Institution's Engineering Divisional Council.

MR. L. H. SHORT, Director of Overseas Operations, English Electric Co. Ltd., has been elected Chairman of the British Electrical & Allied Manufacturers' Association to succeed MR. E. W. SMALL. MR. H. P. MARTIN, Sales Director, C. A. Parsons & Co. Ltd., has been elected Vice-Chairman.

MR. C. J. ELLIS and MR. H. P. GOUGH have been elected Regional Vice-Presidents of the General Electric Company of Schenectady for the South Eastern and Western regions respectively. Mr. Ellis succeeds MR. C. L. REDD, who, until his retirement from the company on January 1, 1962, will be Con-

sultant to Mr. Ellis. Mr. Gough succeeds MR. C. C. WALKER, who until his retirement on November 1, 1961, will be Consultant to Mr. Gough.

British Railways

MR. H. W. F. RUDKIN, Staff Assistant, Chief Mechanical & Electrical Engineer's Department, London Bridge, British Railways, Southern Region, has been appointed Assistant (Salaried Staff), Establishment & Staff Department, Waterloo.

MR. H. KINSEY, District Commercial Officer, Liverpool Street, British Railways, Eastern Region, who has been appointed Commercial Superintendent (Great Eastern), Liverpool Street, entered the service of the former London & North Eastern Railway at Filey in 1926. He was appointed a Traffic Apprentice in 1933, and, after the completion of his training in 1936, held various positions in the Com-



Mr. H. Geoghegan

Goods Manager. In 1937 he transferred to the Goods Manager's Office (Liverpool Street), on special enquiries at stations. He served with Movement Control, Royal Engineers, from 1940 to 1946 and attained the rank of Captain. He was demobilised in 1946 and became Chief Clerk, Edgware, and later that year District Inspecting Clerk, London Suburban District Goods Manager's Office. In 1948 he was appointed Headquarters Claims Prevention Clerk, Commercial Superintendent's Office, Liverpool Street. In 1951 he became Special Outdoor Representative, Commercial Superintendent's Office, Waterloo. In 1952 he was appointed Assistant Goods Agent, St. Pancras & Somers Town, Goods Agent, Nottingham, in 1956, Assistant District Commercial Manager, Derby, in 1957 and District Goods Manager, Bolton, in 1958.

MR. L. P. LEWIS, Traffic Costing Officer West Midland Division, Birmingham, British Railways, London Midland Region, who



Mr. L. P. Lewis

mercial and Operating Departments including Dock Agent, Grimsby; Goods Agent, Guide Bridge, and, in 1944, Goods Agent, Manchester (Ardwick). In 1948, Mr. Kinsey was appointed Acting Assistant District Goods Manager (Eastern Region), Manchester, where he remained until 1951, when he moved to Liverpool Street as Head of the Terminals Section in the office of the Commercial Manager, Eastern Region. His appointment as Goods Agent, Kings Cross, followed in 1953 and, in 1954, he returned to Liverpool Street as Terminals Assistant to the Commercial Manager, Eastern Region. He became Planning Assistant to Commercial Manager, Eastern Region, Liverpool Street, in 1955, and District Commercial Officer, Liverpool Street, in 1958.

MR. H. GEOGHEGAN, District Goods Manager, Bolton, British Railways, London Midland Region, who has been appointed District Goods Manager, Manchester, joined the former London & North Eastern Railway in 1927 at Deansgate Goods Depot, Manchester. In 1935, Mr. Geoghegan became attached to the staff of the District

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MR. J. B. CAMPBELL, Assistant to the Works Manager (Carriage & Wagon Repairs), Swindon, British Railways, Western Region,



Mr. J. B. Campbell

who, as recorded in our September 8 issue, has been appointed Works Manager (Carriage & Wagon Works), Walker Gate, British Railways, North Eastern Region, was educated at Rothesay Academy and the Royal Technical College, Glasgow. He entered the Railway service in 1941 as an engineering apprentice at the Glasgow St. Rollox Works of the former London Midland & Scottish Railway Company. He was appointed an Inspector in 1946, and became acting Diesel Assistant to the Carriage & Wagon Engineer, Scottish Region, in 1956. At the end of 1959, he was appointed Assistant to the Works Manager (Carriage & Wagon Repairs) Swindon.

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Southern Region traffic reorganisation

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Regional Headquarters	
General Manager ...	MR. C. P. HOPKINS
Administrative Assistant ...	MR. R. F. SIMPSON
Assistant General Manager ...	MR. D. MCKENNA
Works & Planning Officer ...	MR. D. V. ELLISON
Acting Assistant (Special Duties) to General Manager ...	MR. W. C. COLLINS
Works Progress Assistant ...	MR. A. EDWARDS
Works Planning Assistant ...	MR. J. M. LEIGHTON-BAILEY
Finance Assistant ...	MR. H. B. PARSONS
Assistant General Manager ...	MR. P. A. WHITE
Movement Officer ...	MR. A. EARLE EDWARDS
Operating Assistant ...	MR. I. C. MARSHALL
Motive Power Assistant ...	MR. A. T. ING
Rules Assistant ...	MR. W. J. KELLAND
Commercial Officer ...	MR. B. SEYMOUR
Freight Assistant ...	MR. E. J. MATTOCKS
Passenger Assistant ...	MR. H. C. WALTER
General Assistant ...	MR. B. T. WRIGHT

South Western Division Headquarters	
Line Traffic Manager ...	MR. F. P. B. TAYLOR
Works & Modernisation Assistant ...	MR. W. H. J. EVANS
Finance Assistant ...	MR. J. H. JOHNSON
Staff Assistant ...	MR. R. L. BROCK
Indoor Assistant ...	MR. G. R. M. ROBINSON
Traffic Superintendent ...	MR. G. R. CHRIMES
Assistant to Traffic Superintendent ...	MR. F. KNIGHT
Passenger Officer ...	MR. B. H. HAMMENT-ARNOLD
Operating Officer ...	MR. W. O. J. WILLMOTT
Motive Power Officer ...	MR. P. M. HAYDON
Freight Commercial Officer ...	MR. G. C. EDMUNDS
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District Traffic Manager ...	MR. H. E. BARBER
District Motive Power Officer ...	
Southampton	
District Traffic Manager ...	MR. A. C. J. PAYNE
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Central Division	
Line Traffic Manager ...	MR. G. A. WEEDEN
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Staff Assistant ...	MR. W. E. CHEESMAN
Chief Clerk ...	MR. J. M. CRIPPS
Traffic Superintendent ...	MR. H. E. ROBERTS
Assistant to Traffic Superintendent ...	MR. F. HEWETT
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Sales Assistant ...	MR. D. HAYES

South Eastern Division	
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MR. R. GIBLIN, Temporary Relief Stationmaster, Scarborough, British Railways, North Eastern Region, has been appointed Stationmaster, Guiseley.

The late Mr. S. T. Clayton

Among those present at the cremation of the late MR. S. T. CLAYTON, formerly Motive Power Superintendent, British Railways, London Midland Region, whose death, on September 22, was recorded in our September 29 issue, were:—

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Eastern Region

Mr. J. S. Jones.

Scottish Region

Mr. K. R. M. Cameron.

Southern Region

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Western Region

Mr. E. C. Bourne, Mr. W. N. Pellow, Mr. C. H. D. Read, Mr. W. Sidwell, Mr. H. E. A. White.

Ministry of Transport

MR. P. E. LAZARUS has been appointed Principal Private Secretary to the Minister of Transport. He succeeds MR. J. R. MADGE.

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Obituary

We regret to record the death, on September 21, of MR. IR. J. H. VERSTEGEN, formerly Chief Signal Engineer of the Netherlands Railways.

We regret to record the death, at the age of 68, of MR. ROBERT FLACK, one of the three members of the Ulster Transport Tribunal.

sultant to Mr. Ellis. Mr. Gough succeeds MR. C. C. WALKER, who until his retirement on November 1, 1961, will be Consultant to Mr. Gough.

British Railways

MR. H. W. F. RUDKIN, Staff Assistant, Chief Mechanical & Electrical Engineer's Department, London Bridge, British Railways, Southern Region, has been appointed Assistant (Salaried Staff), Establishment & Staff Department, Waterloo.

MR. H. KINSEY, District Commercial Officer, Liverpool Street, British Railways, Eastern Region, who has been appointed Commercial Superintendent (Great Eastern), Liverpool Street, entered the service of the former London & North Eastern Railway at Filey in 1926. He was appointed a Traffic Apprentice in 1933, and, after the completion of his training in 1936, held various positions in the Com-



Mr. H. Kinsey

mercial and Operating Departments including Dock Agent, Grimsby; Goods Agent, Guide Bridge, and, in 1944, Goods Agent, Manchester (Ardwick). In 1948, Mr. Kinsey was appointed Acting Assistant District Goods Manager (Eastern Region), Manchester, where he remained until 1951, when he moved to Liverpool Street as Head of the Terminals Section in the office of the Commercial Manager, Eastern Region. His appointment as Goods Agent, Kings Cross, followed in 1953 and, in 1954, he returned to Liverpool Street as Terminals Assistant to the Commercial Manager, Eastern Region. He became Planning Assistant to Commercial Manager, Eastern Region, Liverpool Street, in 1955, and District Commercial Officer, Liverpool Street, in 1958.

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Goods Manager. In 1937 he transferred to the Goods Manager's Office (Liverpool Street), on special enquiries at stations. He served with Movement Control, Royal Engineers, from 1940 to 1946 and attained the rank of Captain. He was demobilised in 1946 and became Chief Clerk, Edgware, and later that year District Inspecting Clerk, London Suburban District Goods Manager's Office. In 1948 he was appointed Headquarters Claims Prevention Clerk, Commercial Superintendent's Office, Liverpool Street. In 1951 he became Special Outdoor Representative, Commercial Superintendent's Office, Waterloo. In 1952 he was appointed Assistant Goods Agent, St. Pancras & Somers Town, Goods Agent, Nottingham, in 1956, Assistant District Commercial Manager, Derby, in 1957 and District Goods Manager, Bolton, in 1958.

MR. L. P. LEWIS, Traffic Costing Officer West Midland Division, Birmingham, British Railways, London Midland Region, who



Mr. L. P. Lewis

has been appointed Finance Assistant to the Line Traffic Manager, Crewe, commenced his railway career with the former London & North Eastern Railway in 1937. From 1936 to 1946 he served with H.M. Forces. On demobilisation, Mr. Lewis joined the former Great Western Railway and gained experience in the Traffic Department, becoming a Relief Stationmaster and being employed later on train running duties and passenger services planning. In 1953 Mr. Lewis was transferred to the British Transport Commission as an Assistant in the Traffic Costing Service, moving to Paddington in the same department the same year. He moved to Glasgow in 1954 and was later appointed Traffic Costing Officer and in 1960 was appointed Traffic Costing Officer, West Midlands Division, British Railways, London Midland Region.

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NEW EQUIPMENT *and Processes*

LIFTING AND TIPPING MACHINE

The Hi-Tip has been developed to lift any kind of container weighing up to 10 cwt. and tip it to empty its contents into a hopper, truck, mixer, or other receptacle.

The machine has a minimum height of lift of 4 ft. 6 in. Vertical sections can be added to increase this dimension. Fabrication is of $\frac{1}{2}$ -in. mild steel of all-welded construction. Occupying an area of

and an overload switch protects the motor.

Start and return operations are actuated manually, but automatic sequence control can be provided, emptying time being controlled by a variable time switch. Speed of lift is 30 ft. per min. and the standard tipping angle is 30 deg. from the vertical. The cradle can be adapted to take any type of container.

The machine is suitable for continuous 24-hr. operation. It requires virtually no maintenance and is foolproof in operation.

Further details can be obtained from the manufacturer, Russell Constructions, Limited, Russell House, Adam Street, London, W.C.2.



only 3 ft. x 4 ft. 6 in., the base houses the electrical equipment, control mechanism, main drive, and chain compensating device, all mechanical parts being adequately protected. The top unit contains the actuating cam guides for the tipping action. The centre sections, which can be added or removed to alter the height of lift, include the guide rails. Automatic stop devices are fitted at loading and tipping positions

between the cable and terminal is obtained by the provision of small serrations which clear any oxidised skin from the cable during the clamping operation. This ensures a consistently high conductivity, which is an important requirement of cable assemblies for signalling, telecommunications, and computer work. The A.M.P. plug and socket range has also been extended to include up to 12 way for small electrical appliances and up to 104 way for computers and similar equipment. Further details may be obtained from Aircraft-Marine Products (Great Britain) Limited, Amplo House, 87-89 Saffron Hill, London, E.C.1.

SELF-PROPELLED CRANE

The Taylor "Jumbo" Series 48 is a one-man-operated self-propelled crane, and is powered by a 48-h.p. diesel engine. All hydraulic in operation, it possesses a two-part hydraulically operated telescopic jib with a fixed hook of 3 ton to 37 cwt. capacity, the load between these two extremes being governed by the amount of extension of the jib. Maximum loads can be handled with the jib in the horizontal position. A valuable ancillary is the Taylor grab which has proved itself to be extremely useful in the handling of all kinds of bulk materials. Manufactured in four different sizes, it is positively secured to the crane jib and operated by a powerful self-contained closure mechanism. Further details can be obtained from the manufacturer, F. Taylor & Sons (Manchester) Ltd., Salford, Lancashire.

SOLDERLESS TERMINALS

The A.M.P. range of electrical terminals and connectors now include a number of types specially designed to withstand rail-track and power unit vibration. These connectors and many other types are displayed at an exhibition of A.M.P. products at Fort Glasgow. The basic feature of these terminals is that they are assembled without soldering, the mechanical and electrical bonding being obtained by crimping the terminal to the cable end. In the smaller sizes the crimping is done by a special form of hand squeeze tool, a feature of which is that the tool jaws must be fully closed before the tool can be released from the cable. For heavier cable ends the tool is power-operated by compressed air, electric, or hydraulic units. A low electrical loss



East Indian Railway Dinner

Progress of electrification on the system

Mr. H. W. Puttick presided at the 59th annual dinner of East Indian Railway Officers held at the Connaught Rooms, London, W.C.2, on September 27. The principal guest was Sir Frederick Bourne.

The Chairman, in the course of his remarks, stated that he had obtained a good deal of information about the position on the East Indian Railway. In 1959 the goods traffic rose to 37.44 million tons, and in 1960 it was estimated that it would amount to 39.82 million tons. In ten years the daily average suburban passengers rose from 73 lakhs to 1.75 lakhs. This is due mainly to the increased number of trains, and to the quicker turnround, consequent on the electrification of the suburban services.

The railway was electrified as far as Burdwan on 3,000 v. d.c. including the Sheoraphuli-Tarakeswar branch, but the Howrah Burdwan Chord still ran on steam. Power for the electrification was obtained from the Damodar Valley Corporation. The rolling stock consisted of 47 three-coach electric multiple-units and ten 3,000 h.p. electric locomotives. The multiple units were run as three-, six- or nine-coach trains according to traffic requirements. Against the 34 up and 34 down steam trains, which had been the ultimate capacity of the tracks, the electric trains numbered 63 up and 63 down trains a day. The running time of the electric trains was 30 per cent to 40 per cent of the running time of the steam trains.

Extension of electrification

There was no electrification between Burdwan and Durgapore, but beyond this the electrification was at 25,000 v. a.c. and this went as far as Gomoh at present; it was intended to continue this as far as Moghal-Serai, and this should be completed during 1961. Eventually there would be 100 electric locomotives at Asansol which would haul 3,600 tons at 40 m.p.h. on the level, or 2,300 tons at 30 m.p.h. on a 1-200 gradient. Before electrification there were 183 steam locomotives based on the Asansol Shed. The Pathardih branch was also electrified as it carried heavy mineral traffic. All five tracks between Asansol and Sitarampur were electrified, three between Sitarampur and Barakar, and two tracks between Barakar and Gomoh.

Sir Frederick Bourne, replying for the guests, said that his only direct connection with railways had been as chairman of the Assam Railway & Trading Co. Ltd., but during his service in India he has formed a high opinion of the railways there, particularly as to comfort and good riding. In particular, he had been impressed by the fact that there was a great difference between the ease and comfort with which coaches were coupled in that country as compared with those in Britain.

Mr. Puttick, in closing the proceedings, said that as was already known there would be only two more of these dinners. Mr. F. C.

Badhwar would be the next chairman, but it had been thought desirable, in view of the possibility that he might not be able to attend in person, to appoint Mr. B. G. Smith as vice-chairman. At the last dinner in two years' time Sir Robert Marriott would be in the chair.

Among the officers and guests who attended the dinner were:

Messrs. J. M. Agabeg, E. P. Blake, S. Brooks, G. W. Brown, C. N. Burns, N. Calder, D. R. Carmody, D. D. Cruickshank, G. M. Daniell, A. C. Ducasse, S. Edwards, J. M. Fenton, M.P. Fleming, E. Gardner, J. C. Gibson, H. Gordon-Jones, A. R. Gundry, J. H. Gundry, R. H. Gundry, L. V. Hart, R. C. Harvey, J. R. Hemsley, G. I. Hewitt, A. B. Holguette, R. G. Hughes, D. H. Hughes.

Messrs. H. R. Juilts, H. L. Kelly, J. C. Lamb, T. T. Lambe, P. Lemondine, Sir Robert Marriott, Messrs. H. F. Merrington, D. H. Murray, R. E. Nissen, R. S. Oakley, J. F. Pegg, C. Reid, E. N. D. Repper, G. W. N. Rose, E. J. N. Robertson, H. Sarin, R. Saunders-Jacobs, H. J. A. Slaton, B. G. Smith, A. T. Stephens, H. V. M. Stewart, E. L. Towner-Jones, O. R. Tucker, C. J. Vanderputt, A. V. Venables, J. F. Vincent, R. M. Watson, V. G. Wilton.

Dr. Beeching's message to British Railways staff

In the wage packets of all British Railways staff last week was a personal message from Dr. Beeching, Chairman of the British Transport Commission, urging them to make a big effort to carry all the coal traffic on offer to rail this coming winter. The message read:—

"Never before has it been so necessary for us to attract to rail all the good traffic

which we can get. The best of traffics is coal, and yet for the past two winters we have had to divert coal from rail to road, and pay for doing so, because we were not able to carry it all ourselves. This winter we shall have a chance of taking more coal than we have moved in recent years. We mean to carry every ton that is offered. This will involve carrying about 3½ million tons a week, compared with last winter's best of 3 million tons. In other words, we must clear an extra ten to 12 million tons over 20 winter weeks. You know better than I do what this means. We must, among other things, avoid the hoarding and over-ordering of wagons; they must be moved and cleared quickly and sent back to where they can earn money by being loaded with more traffic. It will be difficult, but we must do it, and with your help we will."

Light industry expansion in Scotland

A new factory at Port Glasgow for electrical component manufacture was officially opened on September 25, by the Rt. Hon. J. S. MacLay, M.P., Secretary of State for Scotland. The factory has been built for Aircraft-Marine Products (Great Britain) Limited by the Industrial Estates Management Corporation of Scotland, operating as agents for the Board of Trade. Guests at the opening ceremony included the Provosts of Port Glasgow, Gourock and Greenock.

At the opening ceremony the Secretary of State paid a warm tribute to A-MP for its initiative in training local labour for this substantial contribution to light industry in Scotland. The company, specialises in the manufacture of every type and size of solderless terminal and cable connector.

A-MP terminals are applied to cable ends by crimping with special tools which may be hand or power operated. A coloured sleeve is applied to the tool handle, the colour coding being used to identify the tool with a particular type of terminal. The terminals



Crimping tool production on turret head-drilling machine



Modernised refreshment room at Perth

are blanked and formed from coiled strip on batteries of high speed automatic presses fitted with electronic controls.

On many applications the terminals are machine applied to the cable ends by the user, and for these the formed terminals remain attached together in the form of a strip after passing through the press. This strip is automatically coiled ready for magazine loading into the machine. These automatic crimping machines are built by A-MP and issued on loan to customers using large quantities of terminals.

A large section of the factory is devoted to the manufacture of the press tools and crimping tools. The tool making equipment, which is of a very high standard, includes a Milne small-hole jig grinder and a Loewe optical profile grinder. Birlec-Sifco furnaces are used for the heat treatment of press-tools and dies.

Rigorous testing

Raw material and finished-product testing of electrical and mechanical properties is particularly exacting. Each crimping tool is tested by a tensile load on a sample cable-end assembly to check the mechanical bonding, and by a high voltage insulation test to ensure that the cable insulation is not cut or punctured by the tool.

Terminal insulating sleeves in various colours are produced on a plastic extrusion press in the form of a continuous tube.

Automatic machines are used to apply the sleeves to the terminals. Moulded plastic multi-pin plug and socket connectors are produced in a wide range of sizes and types.

Modernisation at Perth, Western Australia

A programme of modernisation and extension of the Perth Station refreshment area has been completed. Improvements include larger and more modern dining rooms, bars, and ladies waiting rooms. The work was carried out in three stages to avoid inconvenience to passengers.

An additional 450 sq. ft. of floor area has

been provided in the dining hall with a larger snack bar. Blondewood panelling, vinyl tile flooring and modern plastic sheeting, have been used throughout, whilst aluminium strip egg crate ceiling and diffused lighting have been incorporated in the dining-room improvements. These, together with chrome furnishings and modern interior decorations blend harmoniously to provide an air of brightness and spaciousness.

40-ft. bar

A 40-ft. bar with modern fittings and an acoustic ceiling have been provided in the bar room. Attractive entrances have been installed leading from both the platform and the concourse to give access to the general public as well as to rail passengers. Removal of the telegraph and telephone rooms from the station to a new automatic telephone exchange at East Perth provided the additional area necessary for these extensions.

Marshalling yard at Healey Mills

Work on the Healey Mills Marshalling Yard—the new mechanised yard four miles west of Wakefield for the North Eastern Region of British Railways, designed to handle the heavy flow of rail traffic between Yorkshire and Lancashire—is progressing well. With much of the site preparation work well advanced, and many of the sidings laid, the stage is now set for the installation of technical equipment.

The complex signalling equipment required for controlling shunting operations within the yard itself involves the provision of 68 electro-pneumatic point machines of the direct acting type, also 148 track and rail circuits for controlling the retarders and points.

Points leading from the reception sidings to the hump crest will be controlled by push buttons on the route-setting principle, while those between the hump crest and the sorting sidings will be operated by a route storage system. All points will have individual three-

position switches for emergency operation. On the crest of the hump, a three-aspect double-sided lunar white hump signal is to be provided, which will display "Normal," "Slow" and "Stop" aspects. Sixteen two-aspect position-light shunt signals will control movements in the reception sidings up to the Hump Signal.

The switching of points will be governed from a control desk housed in the Control Tower overlooking the hump. The desk will have a diagram of the geographical layout of the controlled area, with point and signal switches and indications for points, signals, rail and track circuits,

Automatic control of retarders

Two primary retarders and eight secondary retarders will be provided, operated by compressed air supplied from any two of three 350 cu. ft. per min. air compressors housed in a separate building adjacent to the Control Tower. Automatic control of the retarders will be provided by computing equipment which receives information on wagon weights, speeds and rolling resistances from detectors and radar antennae in the area. Provision is made for the fully automatic routing of wagons from a list received at the console before each train is to be "humped." The primary retarders automatically adjust the spacing of cuts of wagons, and the operator, by means of the secondary retarders, can then adjust the speed of "cuts" to ensure predetermined length of travel into the sorting sidings, and buffering at the required speed.

The contract for main line power signalling covers the provision of a route relay interlocking system to control the entrances and exits of the yard, and for colour light signalling on 24½ miles of track. The system will be operated from a separate console in the Control Tower which will have geographically-mounted push buttons and an illuminated diagram showing the various indications. The route set indications will be given in the form of a line of white lights, these automatically changing to red by the occupation of the relative tracks. Points will be set to the required position by operation of the Entrance-Destination push buttons, but, for individual operation, three-position thumb switches will be provided. The installation will control 58 main colour light signals, 106 position light ground subsidiary signals, 142 electro-pneumatically operated points and 334 track circuits, covering no less than 410 routes.

Manual signalboxes replaced

The work of seven manual signalboxes—at Horbury (Millfield Road), Horbury and Ossett, Healey Mills East, Healey Mills West, Thornhill Midland Junction, Dewsbury East Junction and Thornhill No. 1—will be replaced by the new installation. The junction at Thornhill will be remotely controlled from the new signalbox which is approximately 2½ miles distant. The interlocking will be carried out by relays housed in a relay room at Thornhill, these being controlled from the signalbox via telephone type cable and switch repeating relays. Indications will be sent back to the signalbox in the same cable.

To facilitate speed of movement in and around the Up departure area, signals and electro-pneumatically operated points will be operated from a small push-button

control console in the Inspector's office.

The telecommunications system, which will be the subject of separate contracts will involve provision of radio communication between Control Tower and strategic buildings and shunting locomotives. Humping locomotives will also have an indication of the main hump signal mounted in miniature in the cab.

Telephones will be provided to give inter-communication between all points of the Yard, and loudspeaker equipment will be installed between the reception sidings, Control Tower, and other key points. A pneumatic tube, to be installed between the Hump Inspector's room and the Control Tower Operator's desk, will facilitate the transmission of information concerning shunting, and will enable cards with details of the "cuts," compiled from information given by the cut-card operators in the reception sidings, to be transmitted to the Controller.

"Assured arrival" service

On October 2, British Railways introduced three overnight "assured arrival" freight expresses in both directions between London, Sheffield, Hull and Edinburgh. These trains give assured next day arrivals for containers and full wagon loads and have been introduced in an attempt to attract heavy freight traffic back to rail.

Progress of the trains throughout the journey is reported to railway control offices along the route to ensure that fast timings are maintained. Road collection and delivery arrangements at forwarding points and destinations have been specially planned to connect with these trains.

New station at Barking

On September 29, Councillor Leonard Wright, J.P., Mayor of Barking, opened the new Barking station, situated on the

INTERNATIONAL UNION OF RAILWAYS



Dr. Richard Beeching, Lady Jenkins, Captain and Mrs. Bolland, Mrs. Beeching, Sir Gilmour Jenkins, Mrs. and Mr. John Ratter at the U.I.C. dinner on board rms. Arlanza, reference to which was made in our last week's issue

London Tilbury & Southend Line. In the presence of Major-General G. N. Russell, Chairman of the Eastern Area Board, Mr. H. C. Johnson, General Manager, Eastern Region, other railway officers and many civic and local dignitaries, he unveiled a commemorative plaque to mark the occasion, in the concourse, which is an outstanding feature of the new building.

Situated some 7½ miles from Fenchurch Street, Barking is one of the busiest suburban stations in the country, handling about

50,000 people each day. Over 2½ million tickets and about 70,000 season tickets are issued annually at this station. A particular feature is the large amount of interchange traffic, for about 15,000 passengers change trains here daily from the District Line (L.T.E.) to London, Tilbury & Southend services and vice versa. Previously, travellers had to cross from one platform to another by way of footbridges, but with cross-platform interchange now provided, passengers can change from the 750 trains which call here daily without crossing the footbridge or going through the subway.

A new signalbox, also constructed as a part of the scheme, has enabled nine old signalboxes in the vicinity to be closed.

Staff & Labour Matters

Threat of strike by Scottish railwaymen

At a meeting of the Glasgow and South-West Scotland District Council of the N.U.R. held on October 1, the following resolution was passed opposing cuts in train services on the Scottish Region and threatening strike action as a result.

"This Council, alarmed by the effect of the proposed cuts in the Scottish Region beginning on November 6, declares its opposition to such cuts because of the effect on the services to the travelling public and on the staff of the railways. We consequently decided to call on all our members to cease work at 12 midnight on November 5.

"It was also decided that this decision be conveyed to their National Executive in London and to the Co-ordinating Committee of District Councils and that there should be a meeting of the East of Scotland and North of Scotland District Councils with a view to an all-Scotland implementation of their point of view."



Councillor L. Wright, J.P., Mayor of Barking, performs the opening ceremony

CONTRACTS AND TENDERS

Healey Mills marshalling yard £617,000 contracts

British Railways, North Eastern Region, has placed contracts totalling over £617,000 with the Westinghouse Brake & Signal Co. Ltd., for power operation of marshalling yard points, signals and retarders, and for main-line power signalling in connection with the new Healey Mills marshalling yard.

A control tower costing about £75,000 is to be built by Mitchell Construction Co. Ltd. for the new railway marshalling yard at Healey Mills, near Wakefield, Yorkshire. The contract just awarded by the British Transport Commission makes the total value of Mitchell contracts at marshalling yards in the North Eastern Region amount to about £475,000. Work on the control tower, which will be a reinforced concrete frame building with brick cladding, is due to begin shortly. The architects are Richard Pickles and Partner, Halifax, in collaboration with the Architect, Chief Civil Engineer's Department, North Eastern Region, British Railways.

Strommens Verksted A/S has received a contract for 90 electric motor-coaches and trailers for the new underground railway at Oslo, at a cost said to be about £3,500,000.

Copperad Limited has been awarded a contract for 316 single-sided insulated radiant panels and 1,140 ft. of Raystrip to be installed at the Chart Leacon repair depot of British Railways, Southern Region.

British Railways, North Eastern Region, has placed the following contract:
Arundel (Contractors) Limited: cleaning and painting of bridges on the Cleckheaton branch.

The South African subsidiary of Efco Furnaces Limited, Efco (South Africa) (Pty.) Limited, has obtained orders for furnaces valued at £70,000 from South African Railways. The orders cover an electrically heated closed-quench furnace, a pit-type gas carburising furnace, a continuous mesh belt conveyor furnace and two bogie hearth furnaces.

The British Transport Commission has placed the following orders:

The English Electric Co. Ltd.: 17 main-line diesel-electric type 3 locomotives.
The Brush Electric Engineering Co. Ltd.: 10 main-line diesel-electric type 2 locomotives.

British United Traction Limited: 20 sets of equipment for motor cars, each set comprising two 230-h.p. engines and transmissions and the necessary control gear. 20 sets of control equipment for the non-driving trailer cars.

Tenders have been called for the proposed East African Railway & Harbours authority at Port Reitz which will be known as

the Kipevu Oil Terminal. The jetty, with a length of 1,200 ft., will consist of a pipeline trace and 16 ft. roadway ending in a 200 ft. T-head jetty. The pier will house the pipeline terminal together with gear to handle flexible pipes at the seaward end, such piping making up to a tanker's manifolds for discharge of bulk stock.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Argentina:

3 diesel locomotives (narrow gauge) for port area work.

The issuing authority is the Port Directorate of the Argentine Ministry of Public Works, Suministros y Compras, Rivadavia 578, piso 1, Buenos Aires, to which bids should be sent. The tender No. is 65/61. The closing date is October 16, 1961. The Board of Trade reference is E.S.B./30713/61.

From Egypt:

Supply of taps, dies, reamers, etc.

The issuing authority is the Purchases & Stores Department, Railway Buildings, Shoubra Subway, Cairo, to which bids should be sent. The tender No. is E.R. 308G.8/395. The closing date is October 21, 1961. The Board of Trade reference is E.S.B./30322/61.

From Pakistan:

41 items—steel channels, angles, tees, plates, billets, etc., total quantity 3,400 long tons

19 items—components for fabrication of broad gauge railway wagons, including, axles, tyres, springs, vacuum brakes, valves, couplings, etc.

The issuing authority is the Secretary, Railway Board, Ministry of Railways & Communications, Government of Pakistan, Rawalpindi, to whom bids should be sent. The tender No. is P. & D. 61/MTRL/2/TDR. The closing date is November 14, 1961. The Board of Trade reference is E.S.B./30406/61.

2,580 helical springs for buffers, outer C. & W. silico-manganese.

The tender No. is P5/ACST/EB1/15/16. The closing date is November 15, 1961. The Board of Trade reference is E.S.B./30407/61.

3,690 tubes steel solid drawer boiler P. & R. 12 ft. 1 in. x 1½ in.

The tender No. is P6/EA1/MG/22/61/ACST. The closing date is November 15, 1961. The Board of Trade reference is E.S.B./30411/61.

Tyres, steel, tender C.W.D. Loco. to N.W.R.

Drawing No. LW1257 shown in P.W.R. Drawing No. LW1256, alt. (1), 118 nos. Tyres, steel, engine front truck for CWD Loco to N.W.R. Drawing No. LW1256 (1), 30 nos.

Tyres, steel, hind truck CWD to N.W.R. Drawing No. LW1259 shown in N.W.R. Drawing No. LW1256 alt. (1), 8 nos.

The tender No. is P6/EA1/BG/22/60/ATW/ACST. The closing date is November 8, 1961. The Board of Trade reference is E.S.B./304126/61. The issuing authority for

the above tenders is the Chief Controller of Stores, Pakistan Eastern Railways, Pahartali, Chittagong, to whom bids should be sent.

1 water-cooled air compressor.

The issuing authority is the Chief Controller of Purchase, Pakistan, Western Railway, Empress Road, Lahore, to whom bids should be sent. The tender No. is P-413/P6/4-61. The closing date is October 28, 1961. The Board of Trade reference is E.S.B./30382/61.

Tenders are invited by Pakistan Industrial Development Corporation for supply of 3 diesel locomotives with spares for 2 years' maintenance to be imported against ceiling of foreign exchange. Specifications and bid conditions are set forth in written invitation to tender No. CPB-2/9991, obtainable from the Deputy Chief Accountant, P.I.D.C., P.I.D.C. House, Kutchery Road, Karachi.

From Thailand:

2 ganger railcars with trailers conforming to the following specification:

Description

Power unit: diesel engine, air-cooled, 4 cylinders, vertical stroke
Rating at 2,000 r.p.m. 72 h.p.
Max. speed in both directions 50-60 Km/hr.

Shifting gear 4 speeds

Brake system: oil pressure brake

Rail car: The frame of the rail car shall be made of steel section of arc welded construction for the gauge of 1,000 mm. track. The driver's cabin shall be fitted with sinkable side window, and wind-screen wipers, the driver's seat is hinged and adjustable. Rollers shall be provided at both ends for loading of rails. Couplings and sanding device shall be provided. No part shall protrude beyond the loading gauge

Trailer for ganger: gauge of track, 1,000 mm.

Loading capacity, about 5,000 kg.

Brake system: air brake including emergency brake valve, hand-operated brake.

The tender No. is 04331. The closing date is October 25, 1961. The Board of Trade reference is E.S.B./31003/61.

1 motorised wood turning lathe of 9½ in. swingover bed and 60 in. distance between centres

1 combination disc and spindle sander with 24 in. diameter disc

1 motorised circular saw bench diameter of saw 24 in., depth of cut 9 in., width from saw to face 20 in.

1 motorised universal wood working machine to take saw 16 in. diameter, plane 9 in.

The tender No. is 04343. The closing date is November 2, 1961. The Board of Trade reference is E.S.B./30419/61. The issuing authority for the above tenders is the State Railways of Thailand (Yod-Se) Bangkok, to which bids should be sent.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

NOTES AND NEWS

Japanese delegation visit. A delegation from the Japanese drop-forging industry visited the works of B. & S. Massey Limited on September 26. The delegation was on a two-day visit to this country.

Traffic Commissioners' annual reports. The annual reports of the Traffic Commissioners for the period April 1, 1960 to March 31, 1961, were published on September 29. The reports are available from H.M. Stationery Office, price 5s.

Railway film show. Mr. J. Adams and Mr. P. Whitehouse, joint authors of the television "Railway roundabout" films have arranged a film and colour slide show at the Midland Institute, Birmingham, on November 15. Admission is free.

Institute of Traffic Administration. Among the subjects to be presented to the London Centre of the Institute of Traffic Administration during its 1961-62 Session are "Channel Tunnel," by Mr. L. d'Eranger, on February 6, 1962, and "The Relationship of Air Travel with other forms of Transport," by Colonel A. C. Ping, on April 10, 1962. The annual general meeting is on March 6, 1962.

Train departure indicator at Euston. A train departure indicator, illustrated below, has been installed on the concourse at Euston Station on the London Midland Region of British Railways. The indicator incorporates removable panels to contain special notices to passengers, and can be moved from place to place. It was constructed by the Partington



Locomotive No. 506 Butler-Henderson after restoration to its old livery

Advertising Co. Ltd. to the requirements of the Public Relations & Publicity Officer, London Midland Region.

Lansing Bagnall at factory equipment exhibition. Lansing Bagnall Limited is to exhibit 2 Towmaster Lansing diesel fork-trucks at the International Factory Equipment Exhibition to be held at Earls Court, London, from November 13-18. They are the 540D of 6,000 lb. capacity and the 680PD of 8,000 lb. capacity, both lifting up to 12 ft.

Presentation to Sir John Benstead. Sir John Benstead, whose retirement as Deputy Chairman of the British Transport Commission was recorded in the personal pages of our August 4 issue, was presented with a cocktail cabinet and a winged armchair by his colleagues at the Commission's headquarters, on September 28.

Locomotive restored. *Butler - Henderson*, No. 62660, Class D.11, 4-4-0, has been restored to its former condition at Gorton

Works and painted in its green pre-grouping livery. It was handed over to Mr. J. H. Scholes, Curator of Historical Relics, British Transport Commission, for preservation as a Museum piece on Tuesday, September 26, at Gorton, by the Assistant Works Manager, Mr. J. T. Hillier. This locomotive is a representative of the former G.C.R. "Director" or 11F class, and was built at Gorton Works in December, 1919, to the designs of Mr. J. G. Robinson. On being taken over by the L.N.E.R. in 1923 it was renumbered 5506 and was again renumbered to 2660 in 1946. It became British Railways 62660 in 1948.

Continuous-welded rails. British Railways, Western Region, announce that the Region's total mileage of continuous-welded rails has now been increased to some 134 miles.

Electronic Computer Exhibition. The Electronic Computer Exhibition at Olympia, London, was opened on October 3, by Lord Brabazon of Tara. The exhibition is open until October 12.

Institution of Locomotive Engineers. The ordinary general meeting of the Institution of Locomotive Engineers will be held on October 24, 1961 at 5.30 p.m. in the lecture hall of the Institution of Mechanical Engineers, 1, Birdcage Walk, S.W.1, when Mr. O. Schlaepfer will present a paper on "Control of Diesel-Electric Locomotives."

C.N.R. new line project. The Canadian House of Commons has given a second reading to the Bill proposing to build a 438-mile railway line into the Pine Point lead-zinc mining area on the Great Slave Lake from Grimshaw, Alberta. The Government will pay a subsidy not exceeding \$86½-million (£29½-million) to Canadian National Railways to acquire the land and build the line. Pine Point Mines is guaranteeing to the C.N.R. enough traffic volume to recover the cost of operating and maintaining the line. The estimated cost of the line, which is expected to be completed by the end of 1966, is \$75-million and except with the approval of the cabinet this estimate must not be exceeded by more than 15 per cent.



Train departure indicator installed on the concourse at Euston Station

Record year. A record year is announced by the Western Australian Government Railways for 1960/61. Losses were cut by £A.1,212,000. Freight ton-mileage increased by 40 million tons to 745 million tons.

Steel Peech & Tozer stockholders. Grades Metals Limited, of Steel House, Hanworth Lane, Chertsey, has been appointed as the Midland, Southern England, and Wales stockholders for Steel Peech & Tozer.

Railway Stock Market

Despite the surrounding depression in stock markets, foreign rails have been steady, but dealings were scarcely adequate to test quotations. Costa Rica ordinary stock was again 38½, and Chilean Northern 5 per cent first debentures 48. Guayaquil & Quito assented bonds have also been maintained at 58½.

Compared with a week ago, Antofagasta ordinary stock eased from 18 to 17½ and the preference stock from 36 to 35½; the 4 per cent perpetual debentures were 40. Brazil Railway bonds were quoted at 3½ and Paraguay Central prior debentures at 18. San Paulo Railway 3s. units eased from 2s. 0½d. to 1s. 11½d. Mexican Central "A" bearer debentures remained at 58. International of Central America common shares were 515½.

Compared with a week ago, Canadian Pacific eased from \$44½ to \$43, at which there is a yield of 6 per cent. The 4 per cent preference stock came back from 54½ to 53½, and the 4 per cent debentures, which were also 53½, compared with 53½ a week ago. White Pass shares were maintained at \$107.

Nyasaland Railways shares changed hands around 11s. 3d. and the 3½ per cent debentures were 32. West of India Portuguese capital stock was 121½.

In the engineering and locomotive sections, with the publication of the financial results, recent speculative activity in Birmingham Wagon shares died down and they came back to 29s. 3d. compared with 31s. 6d. a week ago. North British Locomotive eased from 5s. 3d. to 5s., Beyer Peacock 5s. shares remained at 6s. 4½d. but Charles Roberts 5s. shares strengthened from 5s. 4½d. to 5s. 7½d. G. D. Peters kept at 16s. 10½d., while Westinghouse Brake eased from 29s. 9d. to 29s. 6d. There was again a fair amount of activity in Wagon Repairs 5s. shares, which at 23s. 9d. held the same level as a week ago, but Gloucester Wagon 10s. shares came down from 9s. 9d. to 8s. 9d. British Oxygen 5s. shares dropped from 18s. 6d. to 17s. 6d. their lowest this year, and other active shares reflected the market setback, with Vickers falling further from 30s. 9d. to 29s. 6d. and Stone-Platt from 51s. to 50s., though T. W. Ward (70s.) gained 1s. on balance. Babcock & Wilcox, however, were 1s. 6d. down at 23s. 9d. and Guest Keen 86s. 9d. compared with 88s. 3d. a week ago. Steel shares generally moved lower on balance, but later attracted a little buying at the lower levels.

Elsewhere, reflecting the general trend, Pressed Steel 5s. shares at 18s. compared with 19s. 3d. a week ago. Pollard Bearing 4s. shares at 36s. 4d. were within 9d. of last week's price. In electricals, A.E.I. declined from 35s. to 31s. 3d., G.E.C. from 26s. 9d. to 26s. 3d. and English Electric were 27s. 6d. compared with 28s. a week ago.

Forthcoming Meetings

Oct. 6 (Fri.). The Railway Club. Modernisation in East Kent.

Oct. 7 (Sat.). The Railway Enthusiasts' Club. "Transport Journalism," Mr. W. T. Lambden. 7 p.m., Farnborough.

Oct. 9 (Mon.). The Institute of Transport. Presidential address. Mr. James Amos, C.B.E., M.Inst.T. 6.15 p.m. 66, Portland Place, W.1.

Oct. 11 (Wed.). Institution of Railway Signal Engineers. The reliability of electronic apparatus. 6 p.m. Savoy Place, W.C.2.

Oct. 14 (Sat.). Permanent Way Institution, East Anglia Section. Signalling for Modernisation.

Oct. 16 (Mon.). Historical Model Railway Society. Midland Railway Coaching Stock.

Oct. 17 (Tue.). Institution of Railway Signal Engineers (York). "Modern trends in railway telecommunications and the edu-

cational problems involved," by Mr. S. D. Jones. 5.30 p.m. Signalling School, Toft Green, York.

Oct. 18 (Wed.). Railway Students Association. Presidential address. Mr. A. R. Dunbar, O.B.E. 6.30 p.m. London School of Economics.

Oct. 18 (Wed.). The Railway Enthusiasts' Club. Demonstration of various stages in the preparation of railway coats of arms. Mr. R. E. Vincent, 7.45 p.m. 30, Wandsworth Road, S.W.8.

Oct. 19 (Thur.). British Railways (W.R.), London Lecture & Debating Society. "The changing pattern of running and maintenance under modernisation," by Mr. H. White. 5.45 p.m., Paddington.

Oct. 19 (Thur.). Diesel Engineers & Users Association. A.G.M. Symposium: "Reclaiming worn or damaged parts of diesel engines." 2.15 p.m. 76 Mark Lane, E.C.3.

Oct. 21 (Sat.). Institution of Railway Signal Engineers (Bristol). Visit to Newport signalling installation.

OFFICIAL NOTICES

GHANA CIVIL SERVICE

VACANCIES exist for the following posts in the DIESEL ELECTRIC SECTION of the GHANA RAILWAYS AND HARBOURS:—

CHIEF WORKSHOP SUPERVISOR: Duties: Responsible under the Diesel Electrical Engineer for all scheduled maintenance overhaul both of Diesel Electric and Diesel Hydraulic locomotives in workshops. Qualifications: Candidate must have served a regular and satisfactory apprenticeship with a reputable firm concerned in the manufacture of the above locomotives or on a railway employing these, (ii) experience in this type of locomotion must have been of at least 10 years' duration. Qualification in Mechanical or Civil Engineering is an advantage. Salary in range of £1310-£1660 p.a.

WORKSHOP SUPERVISOR: Duties: Involving supervision of the Mechanical Maintenance Section in connection with the operation of diesel electric engines. Qualifications: An apprenticeship with a recognised firm of Mechanical Engineers, preferably on heavy electric diesel sets. Experience of maintenance work involving high tension current is an advantage. Preference will be given to candidates with the National Certificate in Mechanical or Electrical Engineering. Salary in range of £1040-£1280 p.a.

Appointments are on contract terms for two tours each of 15-18 months. Gratuity £150 p.a. Free passages for officer, wife and up to 3 children under 18 years, and in addition an education allowance for children when not resident in Ghana and attending full-time school of £100 a child for up to 3 children under 18 years. Accommodation at low rental and generous leave on full pay. Interest free advance for car, and car maintenance allowance may be granted. Income tax at low local rate.

For application forms, please send POSTCARD, stating post in which you are interested, to the DIRECTOR OF RECRUITMENT, GHANA HIGH COMMISSION, 248, TOTTENHAM COURT ROAD, LONDON, W.1.

WESTERN WELSH OMNIBUS COMPANY LIMITED

Vacancy for Chief Engineer

THE Western Welsh Omnibus Company, Limited, operating a fleet of some 700 public service vehicles and whose Central Workshops are at Cardiff, invites applications for the position of Chief Engineer which will become vacant on January 1, 1962.

Applicants must have had administrative and technical experience, at senior level, in the maintenance of a fleet of public service vehicles and in the control of staff. The salary will be commensurate with the responsibility of the appointment and will have regard to the particular qualifications and experience of the successful applicant.

Applications, stating age, education, qualifications and family status, together with particulars of existing and previous employments and present salary should be sent under "Private" cover to Mr. T. G. Davies, O.B.E., the General Manager of the Company at Central Omnibus Station, Wood Street, Cardiff, as early as possible and, in any event, not later than October 12, 1961.

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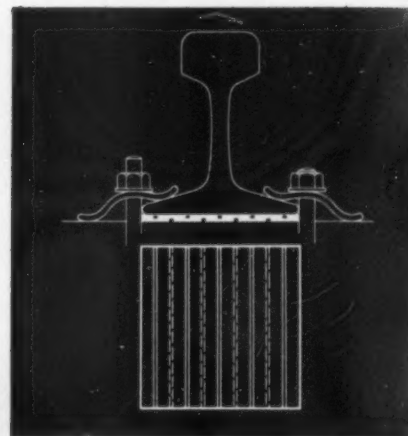
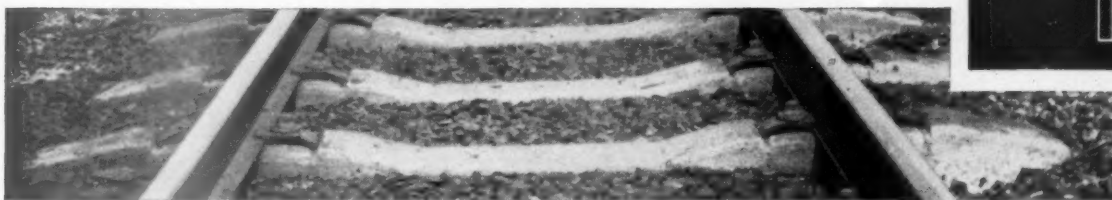
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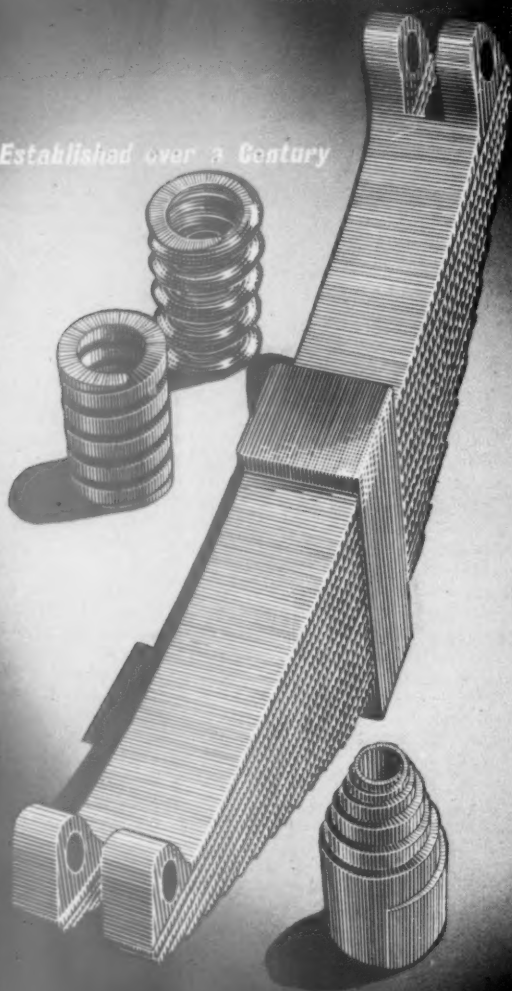


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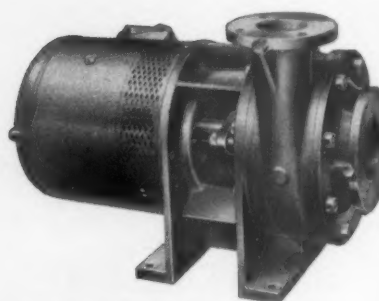
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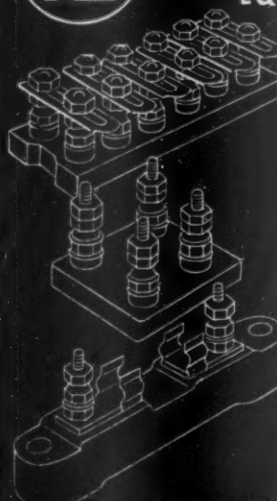
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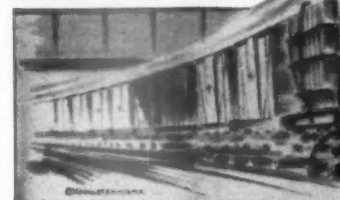
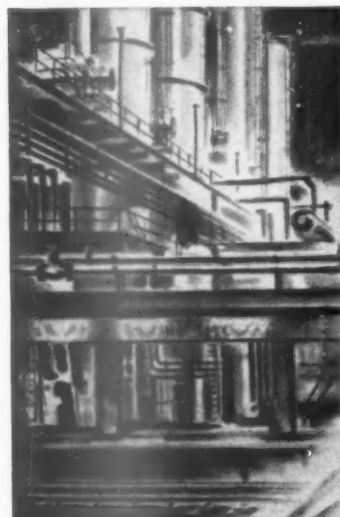
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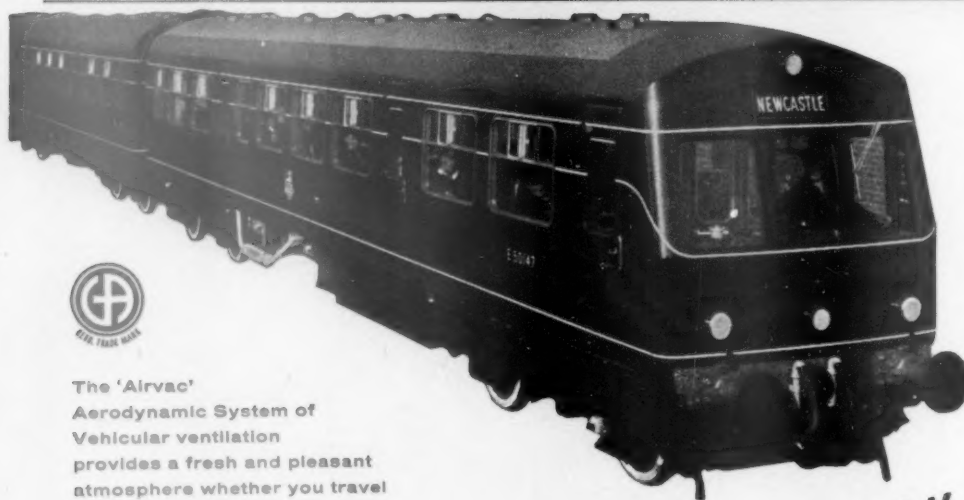
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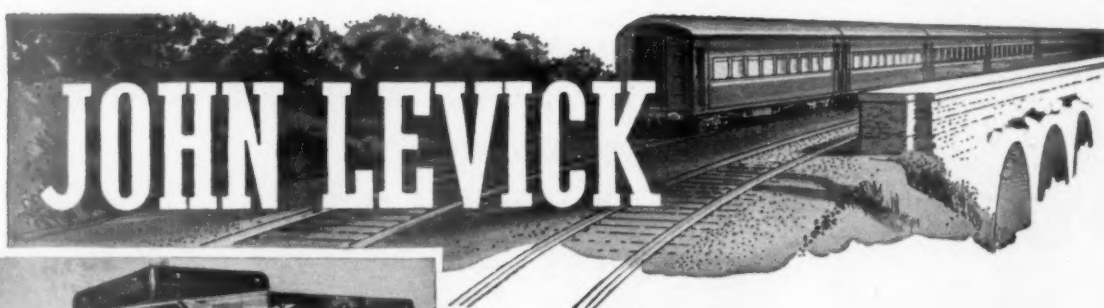


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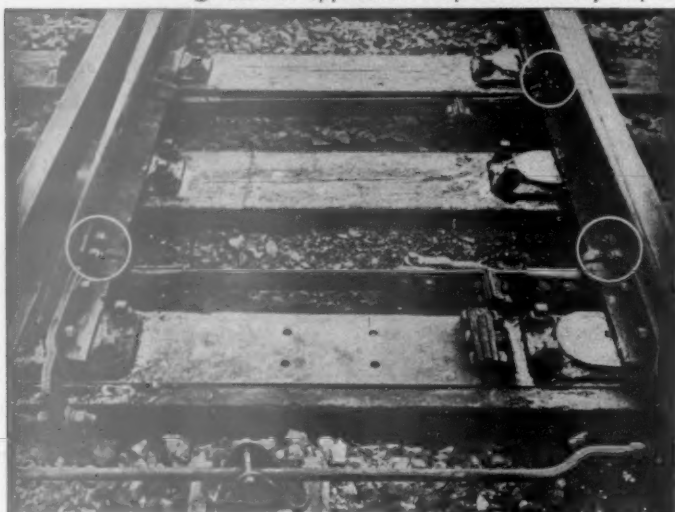
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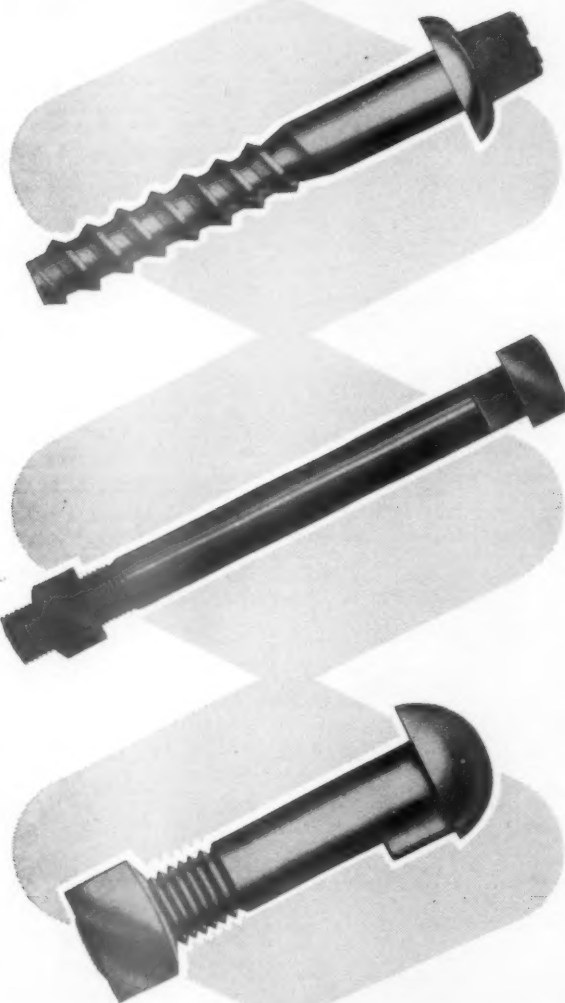
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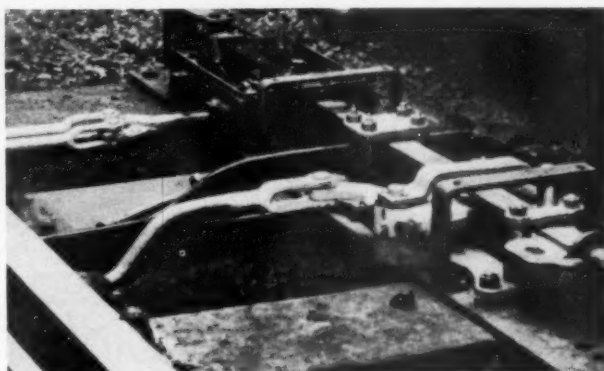
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Left: Standard lubricated assembly with $\frac{1}{8}$ " dia. mild steel pin and hardened steel bushes, after three months operation.



Right: Anodised aluminium alloy pin $\frac{1}{8}$ " dia. from Glacier dry bearing assembly after three months operation. Dark area on pin is P.T.F.E. lead substance and indicates satisfactory operation.



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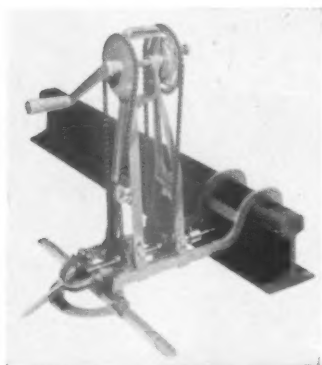
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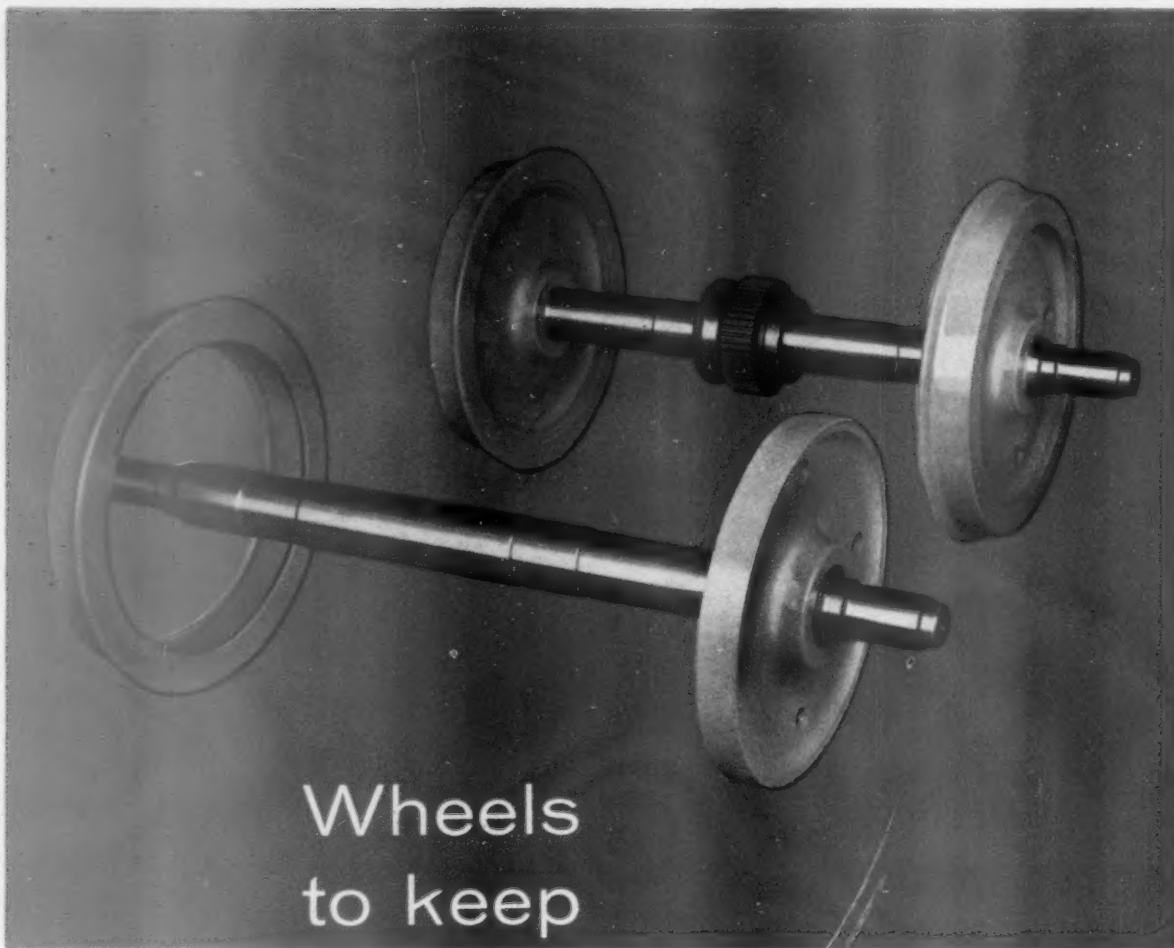
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